IDG

Y2K CASH-FLOW FEARS

Hospitals, others with razor-thin profit margins take measures to ensure the cash keeps coming after Y2K. Page 42

PETER KEEN

Fixing broken business models is IT's new mission. Page 44

NETWORK HARDWARE

Hubs, routers, switches and more. Find out what these networking hardware devices do. Page 66

COMPUTERWORLD

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JULY 12, 1999 • VOL. 33 • NO. 28 • $4 COPY

SUMMER BOOM TAXES TRAVEL SITES

Web traffic spikes spur online system upgrades

BY STACY COLLETT AND STEWART DECK

The summer months are no vacation for IT staff at Carlson Hospitality Worldwide.

The travel conglomerate's reservation center in Omaha handles 130,000 queries and bookings per day for its Radisson hotels, Seven Seas Cruise Line, Regent International hotels and Country Inn and Suite chain.

CARLSON HOSPITALITY'S TOM SIKYTA: Volume pushed firewall to the brink

And this year, the Web is hot — so hot that online traffic, up 175% over last summer, melted Carlson's firewall earlier this year. "We were getting information from users that the site was not available. Looking at transaction volume, it was timing out because the firewall was getting backed up," said Tom Sikyta, senior di-

Summer Boom, page 91

VALUABLE TOOL OR DISTRACTION?

IT debates merits of instant messaging

BY DOMINIQUE DECKMYN

Like the Macintosh and the Internet before it, instant messaging technology is sneaking in the back door of corporate America, presenting IT departments with new opportunities and new challenges.

An exclusive *Computerworld* survey of 149 information technology managers found that 17% are aware of some instant messaging use in their companies but that most don't provide technical support for it. And 78% of the IT managers said instant messaging is unnecessary because existing e-mail and groupware work fine.

Another worry: Employees may waste time on private chat sessions.

Instant Messaging, page 91

GM HITS BUMP IN USED CAR SALES

Online project runs afoul of dealers, Texas law

BY BOB WALLACE

GM has found that there's far more to e-commerce than simply setting up a Web site. The world's largest automaker ran smack into recent legislation that effectively prevents automakers from bypassing dealers to sell cars directly to consumers.

The Texas Department of Transportation denied General Motors Corp. a license to act as

GM, page 16

VENDORS VOW TO OPEN DIRECTORIES

Users say interoperability is key, but top vendors aren't working together to achieve it

BY SHARON GAUDIN

The two powerhouses in the directory market last week announced separate plans to make their directories work together.

The problem, corporate users and industry analysts say, is that Microsoft Corp. and Novell Inc. aren't working together on that vision of interoperability. And the absence of Sun Microsystems Inc. and Internet directory leader Netscape Communications Corp. from the plans has added to the sense of frustration.

"This is crazy," said Don Bowen, directory architect at Caterpillar Inc., a $20 billion heavy equipment manufacturer in Peoria, Ill. "How much sense does it make to say you're working on interoperability but you won't work on it together? . . . It's a big job. It's a huge job, and all these politics are in the way."

Here's what the companies announced last week, as well as expected developments:

- Novell, IBM and Oracle Corp. teamed up with a host of

Directories, page 16

DIRECTORIES list objects, files, devices and user IDs on the network.

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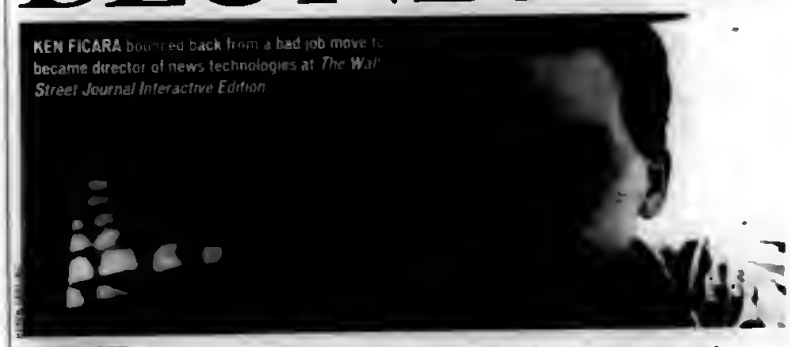

KEN FICARA bounced back from a bad job move to became director of news technologies at *The Wall Street Journal Interactive Edition*

Even near-fatal career moves — such as joining a company in a financial tailspin — can have redeeming value. Julia King profiles three IT executives whose mistakes made them what they are today.

Report begins on page 46.

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intel inside pentium II

AVON CALLING

Avon Products will embark on a massive IT overhaul to support its new sales channels and confront changing market dynamics. New CIO Satoesh Lele (shown above) has plenty of experience for that task. Page 38

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6 CIO SHORTAGE VEXES companies, which can spend as much as six months searching for IT leaders.

6 MOST CRYPTOGRAPHY fails to live up to billing, according to a security guru.

9 COMPAQ WILL INVEST $100 million in 64-bit Unix, relieving non-Wintel customers.

10 WIRELESS APPS may be easier to build with middleware to link handhelds.

12 USER SUES ERP VENDOR, claiming applications can't handle operations; vendor countersues.

24 RED CROSS LINKS Kosovo refugees with Internet tool that tracks their identities.

OPINION

32 INTERNET IGNORANCE rules among corporate boards that don't realize they're clueless, Thorntoo May charges.

34 IT MANAGERS NEED more tech just to keep track of their own resources, Lenny Liebmann laments.

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40 PORTAL POSES more problems internationally than one company expected.

42 HOSPITALS, GROCERS and others that rely on a healthy cash flow need to prepare for potential Y2K disruptions.

42 CORPORATE TRAVEL managers band together to separate Y2K fact from fiction.

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44 HEALING BROKEN business models has become a core mission for corporate IT, writes Peter G. W. Keen.

46 THREE IT PROS who made bad career moves share their regrets — and eventual triumphs.

48 CIOS WILL BECOME chief project officers, as IT leaders redesign companies, Harvard B-school dean predicts.

50 QUICKSTUDY: E-commerce alters "strategic management."

53 EXPERIENCE IN project management can help you climb the IT ladder.

54 Y2K SERVICE OFFERS to help IT people keep up with fixes and personal lives, too.

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SOFTWARE

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61 INTEL PREPS its 64-bit Merced but assures high-end 32-bit chip users they won't be forgotten.

61 FANCY GRAPHICS ARE demoed on Intel-based workstations as Wintel chips away at RISC.

NETWORKS

62 AUTONATION'S small IT team leans on vendors to create a honkin' e-commerce site.

62 BRITISH TELECOM chooses VeriSign's Go Secure to secure its e-mail and other apps.

66 QUICKSTUDY: We define and explain networking hardware.

68 EXEC TECH: We look at portable printers from Canon, Pentax and Brother International.

70 FIELD REPORT: Four managers describe their strategies for leveraging legacy databases in the modern world.

75 FLASHBACK: In 1976, the Apple I was a big hit at the first microcomputer convention.

77 SKILLS SCOPE: Even with Y2K work winding down, the insurance industry is hiring like mad.

The deadline for entries for *Computerworld*'s Top 100 Emerging Companies awards is July 16.

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AT DEADLINE

Hacker App Targets NT

A new version of the Back Orifice hacker tool, which allegedly makes it possible to take over Windows NT-based PCs, was set to be released over the weekend at the Def Con hacker convention in Las Vegas. Last year's first version of Back Orifice allowed intruders to seize control of Windows PCs attached to the Web. Microsoft said at the time that NT users wouldn't be affected by the hacker tool.

Ford CIO Quits

Ford Motor Co. CIO Bud Mathaisel has decided to leave the automaker to "pursue an opportunity in the emerging high-tech industry," the company said Friday. No replacement has been named. Mathaisel, who served in the post for two years, is the latest of more than a dozen top Ford executives to leave the company since Jacques Nasser became president and CEO in January.

IBM Snags $1.2B Deal

IBM Global Services last week announced a 15-year, $1.2 billion strategic outsourcing contract to support Galeries Lafayette's information technology systems. The companies are also forming a services subsidiary that will handle IT consulting for the French retailer's Internet shopping opportunities and back-office systems for e-commerce, IBM said.

Webvan to Expand

Online grocer Webvan Group Inc. in Foster City, Calif., last week signed a $1 billion deal with Bechtel Group Inc. to expand the number of Webvan distribution centers from one to 26 in the next two years. Bechtel will manage the centers' designs and construction.

'Digital Divide' Widens

A U.S. Commerce Department study found a widening of the "digital divide" along racial lines. A child in a low-income white family is three times more likely to have Internet access than a child in a comparable black family and four times as likely to have Web access as a child in a comparable Hispanic household.

Users Losing Faith In Netscape Browser

Tired of waiting for Navigator 5.0, some defect to Microsoft's Internet Explorer

BY CAROL BLIWA

UNCERTAINTY over the future development of Netscape Communications Corp's Navigator browser is causing concern among corporate users — and prompting some to switch to Microsoft Corp.'s Internet Explorer.

More than 15 months ago, Netscape released its Navigator source code for the developer community at large to improve and innovate.

But there's still no shipping version of Navigator 5.0.

A company spokeswoman last week would say only that the beta version — featuring a faster browser engine and up-to-date standards support — will be available by year's end.

"I couldn't even conceive of going to my vice president and advocating Netscape's browser now because of the confusion in the product development," said Barry Starrfield, webmaster at Martin Marietta Materials Inc. in Raleigh, N.C.

Martin Marietta switched to Internet Explorer about seven months ago. "Frankly, I don't know if they're going to be able to deliver a stable browser in any reasonable period of time," Starrfield said.

The North Carolina company isn't alone.

A browser study in May by Zona Research Inc. in Redwood City, Calif., showed that 62% of 209 information technology professionals surveyed whose companies have corporate browser standards chose Internet Explorer.

A key motivating factor is the desire for a uniform Microsoft desktop, observers said.

"We were frankly a little uncomfortable with the level of support we were getting from Netscape, and we didn't feel they were advancing the technology as quickly as Microsoft. It proved to be true," said Bob Lee, vice president of intranet and distributed technology at San Francisco-based Charles Schwab & Co., which made the decision to swap Navigator for Internet Explorer late last year.

Once the browsers became comparable feature-wise in their respective 3.x versions, the big issue for many companies was determining which is faster and supports more Web standards. Many now believe that's Internet Explorer 5.0.

Navigator 5.0 promises updated Java technology and more complete support for key standards — such as Extensible Markup Language and Cascading Style Sheets — than Microsoft's current browser, according to Netscape.

But Netscape hasn't given corporations any clear direction about just when that browser will ship, due in part to the variety of problems that have dogged its Mozilla.org open-source effort. That includes a failure to attract a solid community of developers outside Netscape to work on it.

Netscape's Mitchell Baker, who oversees Mozilla.org, said the project is now going well and the situation has improved.

Web Watching

Browser chosen as a corporate standard or policy:

Note: Both categories include all browser versions

Base: May 1999 survey of 209 corporate IT professionals

Source: Zona Research, Redwood City, Calif.

MOREONLINE

For more information on Netscape and Sun Microsystems Inc.'s browser-development partnerships, visit our Web site.
www.computerworld.com/more

Delta IT Overhaul Misses Passenger-Load Estimating

BY STACY COLLETT

Delta Air Lines Inc. may be revamping its IT systems to boost customer service, but new statistics show the airline missed a spot.

In the first three months of this year, Atlanta-based Delta "involuntarily denied" boarding to 8,144 passengers — nearly as many as the other nine major carriers combined, according to U.S. Department of Transportation statistics.

Involuntary bumpings occur when flights are overbooked and the airline can't find enough volunteers willing to take a later flight.

Delta last month disclosed details of a $250 million project to revamp its customer service systems so that real-time information on flights can be passed directly to customers [News, June 14].

Managing flight loads wasn't part of that plan, said Delta spokesman Kip Smith. "We've been working on solutions [for estimating flight loads] but don't have anything specifically implemented yet," he said.

Delta has been in business long enough to be able to forecast its passenger loads, said aviation consultant Michael Roach, president of Roberts, Roach & Associates in Hayward, Calif. But overall, "8,000 passengers [bumped] is very few. Delta carries more than 100 million passengers a year," he said.

N.Y. to Fine Insurers for Lax Y2K Reporting

Regulators seek disclosure data

BY THOMAS HOFFMAN

The New York State Insurance Department said last week it plans to fine 44 insurance companies for failing to disclose pertinent information about their year 2000 projects.

While the agency is still determining how much each insurer will be penalized, the actions represent yet another attempt by regulators to crack down on the Y2K-readiness of the companies they monitor.

Last month, the U.S. Securities and Exchange Commission (SEC) announced that it's weighing a new rule that would require the brokerages it oversees to verify their Y2K-readiness by Oct. 15 or risk being shut down [News, June 28].

The SEC already requires public companies to report on their Y2K statuses in 10-K, 10-Q and other earnings reports.

New York requires insurers to follow SEC guidelines for disclosing Y2K project information. That information includes companies' overall state of readiness, their project costs, the business risks they face and what kind of contingency planning they have performed.

The New York agency hopes its actions will get insurers to step forward and disclose the statuses of their year 2000 projects to avoid penalties, said a department spokeswoman. The department previously issued warnings to 266 property, life and health insurers that failed to file Y2K plans as of April 1. The number of companies that weren't compliant then dropped to 44.

"I would expect most of the insurers will react positively and [disclose] this information," said Martin Sheffield, vice president of the property casualty rating division at A. M. Best Co., an Oldwick, N.J.-based insurance information and ratings provider.

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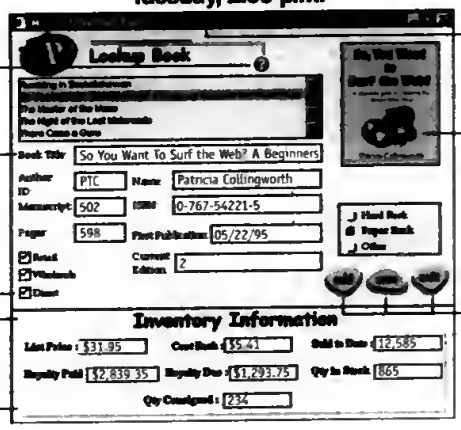

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CIO Search Becoming A Marathon Process

Candidate shortage is only one culprit

BY BARB COLE-GOMOLSKI

MOST observers view the rising corporate profile of CIOs as a good thing. But there's a downside: It's taking longer — often up to six months, even a year — to fill the job.

This can leave "IT rudderless for months at a time," said John Davis, president of an eponymous information technology executive recruiting firm in New York.

That gap can give competitors an advantage and certainly stresses others in the IT department, observers said.

Kmart Corp., for example, has been looking for a CIO for a year, an unenviable situation for any retailer.

"Because of e-commerce, it's especially critical right now to have someone to provide [technological] vision," said Ed Jimenez, an analyst at Gartner Group Inc. in Mountain View, Calif.

Unqualified Backup

During CIO searches, IT responsibilities often fall to the chief financial officer, who is usually not qualified to manage IT projects, Davis said. CIO searches generally take three to six months, but these days, six-month searches are common, recruiters said.

Part of the problem is that CIO candidates are now often required to meet with at least six top executives before getting the nod. That slows down hiring and means that many candidates take other jobs before an offer can be made.

Chris Horrocks, a former CIO at a large financial services firm who interviewed for three other CIO jobs, said searches are complicated by the fact that the position isn't well defined at many companies. He's now president of the strategic applications division at SSDS, an IT services firm in Englewood, Colo.

Finding the right mix of technical and business skills is also an issue, recruiters said.

Davis said companies can speed up the CIO hiring process by developing a team of two or three key executives who can interview the candidate and quickly determine whether there's a fit.

BT Office Products Inc. in Arlington, Texas, has been hunting for a CIO for about four months. Even though eight candidates have had second interviews, the job is still unfilled.

"I can't tell if we're being too choosy or if the candidates are," said Jeff Katon, technical staffing manager.

Katon said the best candidates are asking for more money than the company was expecting to pay, though he declined to say how much. "We're not sure if we want to pay all that money or grow our own [CIO]," Katon said.

Indeed, the short supply of CIO candidates and the long hiring cycles have caused companies to think more about succession planning, Davis said. "But most companies still haven't done much about it," he said.

"Most companies are so thinly staffed in IT that they don't have a senior No. 2 person," said Mitch Work, senior vice president at Dorenfest & Associates Inc., a Chicago-based IT consultancy. Work said members of his firm serve as acting CIOs for clients who are hunting for permanent CIOs. "That's a growing part of our business," he said.

- **Develop a SWAT team** of two or three people who can interview the candidate and quickly decide if the person makes the grade
- **Build "bench strength"** – a team of top IT managers who can step in on a temporary or permanent basis if the CIO job is open
- If you are using a search firm, **provide detailed feedback** to recruiters on the candidates that they send your way

Experts' Opinions on Year 2000 Liability Bill Run Gamut

CIOs, pundits view both sides of issue

President Clinton is expected to soon sign legislation that will limit year 2000-related lawsuits. But it has drawn very strong reactions among information technology professionals and legal experts.

Some say the legislation, which sets a 90-day cooling-off period and creates obstacles to filing lawsuits, will hurt some businesses by protecting negligent vendors. Others say the bill will curb frivolous and expensive lawsuits.

Computerworld reporters Thomas Hoffman and Patrick Thibodeau asked IT executives, lawyers and pundits for their views on the much-debated, year 2000 liability legislation.

Michael Zeitlin
Fellow
Texaco Inc.
Houston

Anything that limits litigation, I'm in favor of. But do I think the bill is needed? No, I don't. It probably isn't as important an issue as a lot of people are making it out to be.

Gregor S. Bailar
CIO
National Association of Securities Dealers Inc.
Washington

We are concerned that entrepreneurial law firms will seek to push aggressively into this new, gray, undisciplined area of Y2K liability and, in fact, tie up the resources and management of industry in months, and perhaps years, of defensive litigation.

That's why we support the legislation.

GREGOR S. BAILAR DEAN MOREHOUS STEPHANIE MOORE
CASSANDRA MATTHEWS MICHAEL ZEITLIN CAPERS JONES

Dean Morehous
Chairman of technology and intellectual property
Thelen Reid & Priest LLP
San Francisco

I don't think this legislation is the panacea that it's being portrayed to be for high-tech companies. There's a real chance the legislation may lead to additional litigation.

For example, this provision that places penalty caps based on the net worth of a company may be unconstitutional.

This cooling-off period is a very common legislative technique. But what if the plaintiff's business is stuck in a ditch for 90 days?

Why should the plaintiff have to wait [to resume normal business operations]?

Cassandra Matthews
CIO
PECO Energy Co.
Philadelphia

The electric utility industry is generally satisfied with the bill. While its impact is uncertain, its prospect could not supercede our obligation to perform meticulous due diligence and complete Y2K-readiness activities.

We must do our best to fulfill our obligation to shareholders, customers and the general public to finalize all preparations under our control.

Capers Jones
Chief scientist
Artemis Management Systems Inc.
Burlington, Mass.

I think it sets a bad precedent. No other industry — pharmaceuticals, aircraft, automotive — has been given permission to harm their clients like the software industry has.

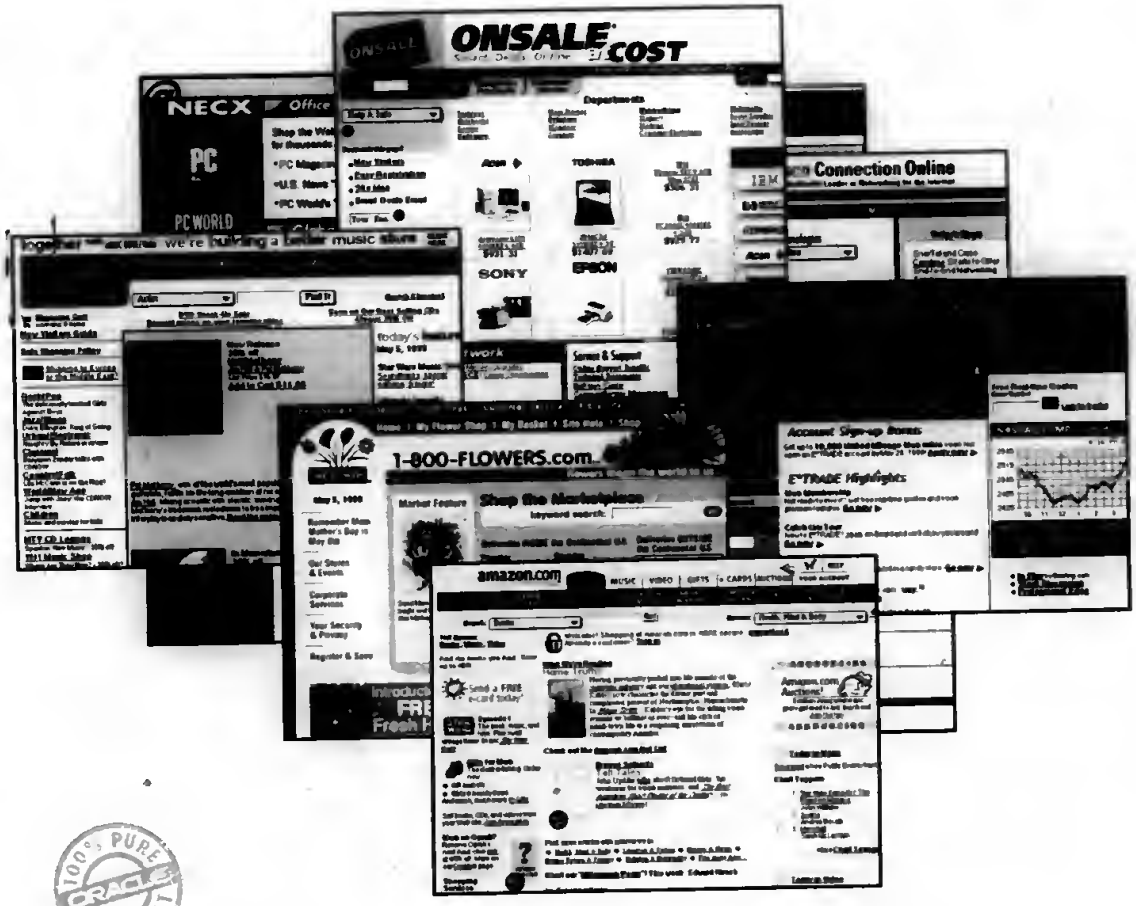
Stephanie Moore
Senior analyst
Giga Information Group Inc.
Stamford, Conn.

The new year 2000 legislation is aimed at reducing frivolous complaints and lawsuits. Bravo. Unfortunately, what the legislation also does is protect large companies from litigation and liability at the expense of other businesses and consumers.

Those businesses and consumers with legitimate claims — and believe me, there will be many people and companies with extremely legitimate claims — will find it harder and more expensive to seek legal redress from companies that were negligent in preparing themselves and their products for the year 2000.

In addition, this legislation is likely to de-motivate the very companies that have been lax in responding to the year 2000 issue so far.

Oracle powers 10 of the top 10



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BRIEFS

Gov. Bush Taps Dell For High-Tech Board

Republican presidential contender George W. Bush has tapped a fellow Texan, Michael Dell, CEO and chairman of Dell Computer Corp. in Round Rock, Texas, to head an advisory board on high-tech campaign issues. Among the high-tech-related measures that Bush, now governor of Texas, said he would support are increasing the current limit on H-1B visas and making the Internet a duty- and tariff-free zone.

AOL, Drkoop.com Enter $89M Pact

America Online Inc. and Drkoop.com Inc. last week announced a four-year, $89 million strategic alliance. Under the agreement, Drkoop.com will fork over the money to be the largest – but not the exclusive – provider of health care content to AOL's 19 million members. The companies will also develop new products and services together.

User Groups Near Merger Decision

The Digital Equipment Corporation Users Society and the International Tandem Users Group said they may be only months away from deciding whether to merge.

A joint task force is expected to submit a recommendation to chapter leaders by Aug. 15. Merger talks started soon after Compaq Computer Corp. acquired Digital last year. Compaq bought Tandem Computers Inc. in 1997.

Short Takes

ORACLE CORP. President Ray Lane has asked to be taken off the short lists for CEO searches at Compaq and Hewlett-Packard Co., an Oracle spokesperson said. . . . The U.S. DEPARTMENT OF ENERGY has created a corporate portal that's expected to eventually reach 90,000 employees and contractors. . . . COMPUTER ASSOCIATES INTERNATIONAL INC. last week outlined its new Storage Area Network (SAN) Integrated Technology Initiative, aimed at offering a SAN management framework.

Don't Go Proprietary, Crypto Expert Urges

Older, tested protocols can beef up security

BY ANN HARRISON
LAS VEGAS

RESPECTED cryptography authority Bruce Schneier last week told a security conference that most products and systems that use cryptography are insecure and most commercial cryptography doesn't perform as advertised.

Instead, he recommended that companies use strong random-number generators and published oonproprietary algorithms and cryptographic protocols.

Schneier, who's president of Counterpane Systems in Minneapolis, the author of *Applied Cryptography* and the inventor of the Blowfish, Twofish and Yarrow algorithms, noted that it's difficult to distinguish bad cryptograpby from good cryptography in security products.

Experienced security testing is needed to uncover bugs, but products are often shipped without that type of evaluation, he told the audience at the Black Hat Briefings, a computer conference here. "Beta testing can never uncover security flaws," Schneier said.

According to Schneier, flaws can be found almost anywhere: in the threat model, the design, the algorithms and protocols, the implementation, the configuration, the user interface, the usage procedures and other locations in the design of products. There's usually no reason to use a new or uopublished algorithm in place of an older and better analyzed one. "There is no need ever for proprietary algorithms," he said.

Insecure random-number generators can also compromise the security of entire systems because the security of many algorithms and protocols assumes good random numbers, Schneier said. He ooted that random numbers are critical for most modern cryptographic applications, including session keys, seeds for generating public keys and random values for digital signatures.

Security consultants at the conference said they took Schneier's suggestions to beart. "I would suggest that no one ever purchase proprietary encryption products if it's protecting anything of value because someone can reverse-engineer it," said Byran Baisden, a software engineer at Edge Technologies Inc. in Fairfax, Va. Edge designed the Nvision product for network management platforms. He also consults for the federal government.

1. Long encryption keys do not equal a strong system
2. It can be impossible to build a secure application on top of an insecure computing platform
3. There is no such thing as tamperproof hardware
4. Any system where the device is owned by one person and the secrets within the device are owned by another, is an insecure system.
5. Many password-protected systems are only as secure as the weakest password
6. Users can't be relied upon to make security decisions

SOURCE: BRUCE SCHNEIER, CTO, COUNTERPANE SYSTEMS

Feds Offer Plan for Sharing Security Data

Part of an effort to protect U.S. systems

BY ANN HARRISON
LAS VEGAS

A White House official last week outlined a 10-point plan for protecting critical U.S. information systems from attacks by hostile nations and organized crime. One goal is to get businesses and government agencies to exchange information about security breaches.

Jeffrey Hunker, director of the Critical Infrastructure Assurance Office of the National Security Council, unveiled the plan at the Black Hat Briefings, a computer security conference here. Known as Version 1.0, the plan is backed by the president's $1.4 billion budget request for national cyberdefenses in fiscal year 2000.

More Reporting

Hunker acknowledged that, in the past, many companies were hesitant to report security intrusions to state and federal agencies, but that may be changing. He noted that the banking industry is setting up a pilot system to confidentially share information on intrusions and threats. The system could include briefings for government agencies and nationwide computer emergency response teams.

Raymond A. Pompon, a data communications analyst at the Boeing Employees Credit Union in Seattle, said he liked the idea of organizations exchanging security informatioo — a process he said was already occurring among credit unions.

The Clinton administration's plan generally calls for the public and private sectors to develop their own safeguards but to work together to identify best practices and swap information.

Hunker said the first phase — to be implemented next year — is for both sectors to identify and address vulnerabilities by using network analyzer software and tiger team attacks.

"The systems we are using are full of holes. They are like Swiss cheese," Hunker said, referring to government systems. "We have to identify critical vulnerabilities and fix them."

In the second phase, government agencies and businesses would set up systems to detect attacks and unauthorized intrusions with firewalls, intrusion detection monitors, enterprisewide management systems and malicious code scanners. Full-scale deployment is expected by 2003.

Other elements of the plan include developing robust law-enforcement capabilities to investigate and prosecute cyberattacks, as well as a federal scholarship program, called CyberCorps, to train information security specialists.

Security Proposal

Ten ideas on how the government should work with the private sector to shore up the security infrastructure:

1. Identify and address vulnerabilities
2. Detect attacks and unauthorized intrusions
3. Increase law enforcement and intelligence capabilities to protect critical information systems
4. Share attack warnings
5. Create a system for response, reconstitution and recovery
6. Enhance research and development
7. Train and employ adequate numbers of information security specialists
8. Increase outreach to Americans on the need for cybersecurity
9. Adopt legislation and appropriations in support of these programs
10. Ensure full protection of Americans' civil liberties

SOURCE: JEFFREY HUNKER, NATIONAL SECURITY COUNCIL

MORE ONLINE

For books, organizations, mailing lists and other resources related to security, visit our Web site.
www.computerworld.com/more

Tru64 Unix, Alpha to Get $100 Million Boost From Compaq

BY JAIKUMAR VIJAYAN

Compaq Computer Corp.'s planned $100 million investment in its Tru64 Unix operating system and 64-bit Alpha microprocessors should reassure users who have been skeptical of the company's long-term plans for those products.

The investment, to be made during the next 18 months, substantially increases the amount Compaq spends on the products, said Don Jenkins, a vice president at Compaq's Unix software division, though he declined to specify the size of the increase.

Specifically, Compaq will focus on increased advertising and marketing, doubling the support staff attached to the products and increasing by 400% the joint marketing funds distributed to key software partners, Jenkins said.

Compaq's mass-volume Wintel commodity technology heritage has prompted questions during the past several months about how the company plans to integrate, support and enhance proprietary technologies including OpenVMS, Unix and Alpha, which it acquired when it purchased Digital Equipment Corp. in June last year.

In a January *Computerworld* survey of 59 Digital users, for example, 36% of the respondents said they felt less secure about those technologies under Compaq, while only 29% said they felt more secure.

On the Right Path

Investments like this show that "Compaq is on the right path now," said Kal Raman a senior vice president at Drugstore.com, a large Tru64 Unix user in Seattle. "I was worried about the loss of focus . . . and a lack of clarity on direction initially" on Compaq's part, he said. But increased spending, particularly on Unix field support, "is probably the smartest move they can make right now," he said.

Compaq's Tru64 Unix currently trails Sun Microsystems Inc.'s Solaris, IBM's AIX and Hewlett-Packard Co.'s HP-UX in market share. But the company plans to improve its position by focusing its $3 billion Unix business on five key markets moving forward, Jenkins said. Those include data warehousing, Internet applications, communications, enterprise resource planning and high-performance technical computing. Compaq will invest development dollars with leading software vendors in each of those areas, Jenkins said.

Though widely considered the microprocessor technology leader, Compaq's Alpha chip has failed to generate much volume, mainly because of a lack of software support.

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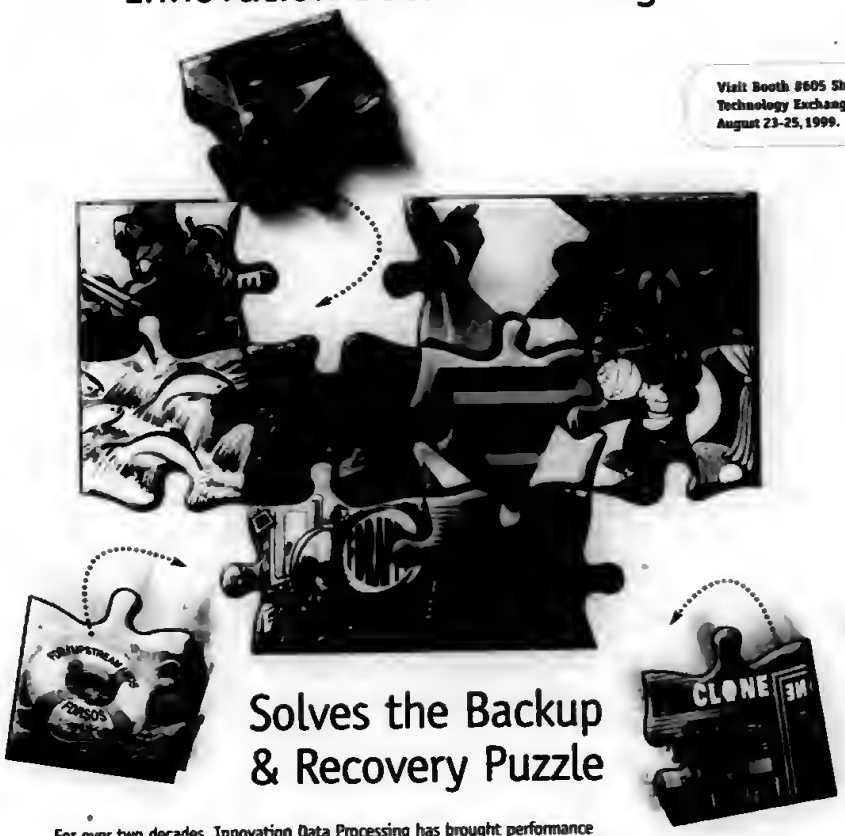

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Wireless Developers Get Tools for Building Handheld Apps

BY MATT HAMBLEN

Corporate developers may find it easier to build wireless applications for handheld devices as a result of Aether Technologies Ioternational LLC's announcement last week of plans to license its middleware and application development tools.

The tools allow developers to build applications that run oo the vendor's Aether Intelligent Messaging middleware. The middleware provides wireless access over multiple protocols and carriers using networks such as Code Division Multiple Access, Mobitex, Global System for Mobile communication and Cellular Digital Packet Data.

The applications can run on several mobile devices, including PalmPilots, Windows CE-based devices, laptops, two-way pagers and Wireless Access Protocol-enabled smart pbones.

Aether has already built several wireless applications for the financial marketplace, including Discovery Brokerage in San Francisco, whicb allows stock trading on most handhelds [News, May 24]. The Owings Mills, Md.-based company is competing against vendors like AvantGo Inc. in San Mateo, Calif. But analysts said Intelligent Messaging appears to work with more devices and can cut the time needed to develop such applications.

In June, Aether joined with 3Com Corp. in Santa Clara, Calif., to create Open Sky, a wireless access service company in Palo Alto, Calif., that will begin serving mainly consumers and small to midsize businesses by year's end.

Intelligent Messaging licenses will be priced based on the number of devices running the applications and will cost less than $2,000 per server and $100 per each client device, an Aether spokesman said.

Other Wireless News

Other developmeots last week included the following:

- Start-up AirFlash.com Inc. in Redwood City, Calif., announced Mobile Portal, a wireless network service it will market to wireless carriers next month to allow the carriers to provide cellular phone users access to content from either AirFlash or the Web, a spokeswoman said.

Analyst Becky Diercks at Cahners In-Stat Group in Newton, Mass., said AirFlash is promising a superior searcb engine that will take into account the phone user's location. For example, someone seeking restaurants would be given the closest ones.

- Motorola Inc. in Schaumberg, Ill., said it will create 1,400 new jobs in engineering and research for wireless systems and infrastructure. The company has beeo developing a wireless IP-based network for more than a year.

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If only," he mulled, "if only...
Seagate's easy to use. Just go to your computer and sit. I said sit! SIT!
Seagate Soft

Sara Lee Unit Drops SAP Apparel Software

Hosiery division still to go with standard R/3 to manage orders

BY CRAIG STEDMAN

ANOTHER user has given up on SAP AG's applications for apparel and footwear makers, although the company — Sara Lee Hosiery — isn't dropping SAP lock, stock and barrel.

The Winston-Salem, N.C.-based unit of Sara Lee Corp. now plans to base its entire enterprise resource planning (ERP) system on standard SAP R/3 instead of mixing that with the newer software tailored for clothing and shoe companies.

The decision to pass on SAP's Apparel and Footwear Solution (AFS) makes Sara Lee Hosiery at least the third user to drop the software this year. New York-based clothing manufacturer Warnaco Group Inc. and AeroGroup International, an Edison, N.J., shoe company, also have stopped work on AFS projects.

Problems with some early installations of AFS first came to light late last year. Two months ago, SAP executives acknowledged that the software wasn't working as planned and said they were assigning teams of developers to work directly with users on fixes (News, May 10).

But that move came too late for Sara Lee Hosiery. "There have just been too many open issues in the market [with AFS], and we felt it was too risky to go on at this point," said Randy Hyack, director of information technology at the panty-hose maker.

Plans Ditched

Sara Lee Hosiery already had sharply scaled back its AFS plans last year, after SAP dropped code that would have managed repetitive manufacturing of high-volume products. But the company had still expected to install a piece of AFS that processes orders and allocates inventory to different retailers.

Now even those jobs will be handled by standard R/3, Hyack said. The hosiery unit went live with R/3's finance and logistics applications two weeks ago, and the order management module is due to be added in six to nine months.

Hyack said using standard R/3 involves some compromises, such as the use of simpler inventory allocation rules. But Sara Lee Hosiery is "committed to SAP as our central system," he said.

Two other early adopters of AFS last week said SAP appears to be making progress in fixing the software's bugs and functional shortcomings.

For example, Superior Uniform Group Inc. twice had to postpone its AFS rollout this year. But Mark Decker, vice president of management information systems at the Seminole, Fla., uniform maker, said it now plans to go live Aug. 1.

Leroy Allen, vice president of re-engineering at VF Corp. in Greensboro, N.C., said SAP delivered on a promised list of bug fixes early last month and has already cleaned up most of a new batch of problems that cropped up since then. "It's too bad it took this long, but they're really focused right now on trying to make sure they get this stabilized," Allen said.

Annegret Sonnenberg, vice president of retail and consumer products at SAP, said 17 users are now live with AFS. "I think we've made a lot of progress," she said. "I'm not saying all the work [to fix the software] has already been done, but I'm pretty confident that we have the situation under control."

REEBOK INTERNATIONAL LTD. The Stoughton, Mass., footwear maker already uses AFS to run its golf shoe division and some international operations, but it has been looking for SAP to speed up the software's ability to check product inventories before expanding usage to its North American sneaker business.

JUSTIN INDUSTRIES INC. The Fort Worth, Texas, company has struggled to link AFS to its footwear division's warehouse management system since last fall. Its goal was to fix the problems by midyear, but company officials wouldn't comment on the status of that work last week.

ERP Project Leads to Court Fight

JBA International Inc. – the other enterprise resource planning vendor with software tailored for apparel and footwear companies – is also having big problems with at least one of its users.

JBA's dispute with Hartmarx Corp. is expected to end up in an Illinois state court, with each company filing a breach-of-contract claim against the other.

Hartmarx, a clothing maker based in Chicago, already sued JBA late last month after it shelved a planned rollout of U.K.-based JBA's applications. The lawsuit seeks to recover the $6.9 million Hartmarx spent on the project.

JBA's suite of apparel and footwear applications were installed at one of Hartmarx's divisions last year. But the $700 million company – which makes products such as men's suits and golf clothes – said the software was "significantly unreliable" and caused "severe operational difficulties."

More details weren't made available.

JBA also allegedly didn't deliver promised improvements fast enough, according to Hartmarx's claims. "Obligations under our contract [with JBA] were not satisfied," said Glenn Morgan, the company's chief financial officer.

But Frank Berger, president of JBA's U.S. subsidiary, based in Rolling Meadows, Ill., said the vendor plans to file its own breach-of-contract claim against Hartmarx.

"We're going to be very aggressive with our legal response," Berger said. "I hate to do this with a customer, but we just can't take this lying down. We feel that we've been wronged."

Berger acknowledged that Hartmarx had run into some problems with the software. But JBA assigned a team of executives and developers to work directly with Hartmarx earlier this year, and Berger said Hartmarx officials "seemed to be happy" with the progress.

Kenneth Cole Productions Inc., a New York-based maker of shoes and handbags, next month plans to go live with a modified version of the same software that JBA delivered to Hartmarx.

Harry Kubetz, senior vice president of operations at Kenneth Cole, said JBA had to make "a massive amount of changes" to the applications to meet all of his needs.

"The software continues to be refined as we speak," Kubetz declared. "But I don't have any hesitation about going live with it."

– *Craig Stedman*

HP Offers Data Warehouse Rescue Service

Prescription: Analyze your business goals

BY JAIKUMAR VIJAYAN

Hewlett-Packard Co. is throwing a life raft to companies with sinking data warehouse projects.

The company last week announced a new data warehouse rescue service under which HP will help users repair projects that are behind schedule, over budget or failing to deliver on expected service levels.

HP will deliver the service along with Tanning Technology Corp., a Denver-based consultancy that specializes in e-commerce and customer relationship management (CRM) application integration and support services.

In a survey of 100 information technology professionals by Cutter Information Corp., 29% of the respondents were only slightly satisfied with their data warehouse efforts, though 50% said they were satisfied.

"Given the statistics of the number of data warehouse projects that fail, a service like this might probably make sense for some customers," said John Goodhart, director of IT at Liz Claiborne Inc. in New York.

The major factors contributing to such disruptions include ever-widening project scope, constantly changing user requirements and improperly sized systems, according to Wayne Eckerson, an analyst at Patricia Seybold Group in Boston.

HP's new services include a two- or three-week assessment of a project, including an analysis of business objectives, underlying system problems and project scope. HP will then work with the customer on getting the system into production on a mutually agreed-upon time schedule and predetermined service levels, said John Santaferraro, a marketing manager at HP.

For example, if a project is failing simply because it has become too large in scope, HP might recommend tighter focus. If systems create a bottleneck, HP will recommend HP products to address the problems.

In touting the service, HP points to its experience with its own data warehouses and 700 previous data warehouse projects that involved delivering those services. Tanning has experience with e-commerce and CRM projects at companies including Federal Express Corp., ETrade Group Inc. and BlockBuster Inc.

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BRIEFS

ERP Maker Downsizes

JBA International Inc., a U.K.-based maker of enterprise resource planning (ERP) software for midsize users, last week said its 3,000-employee workforce is being reduced by 6% as part of a corporate restructuring. JBA is also cutting some projects and focusing most of its efforts on four vertical markets: apparel and footwear, food, automotive components and electronics.

Vantive Loses – Twice

Vantive Corp., a maker of customer relationship management software in Santa Clara, Calif., last week warned of a second-quarter loss of up to $3.7 million and announced that Phil Dunkelberger is resigning as president and chief operating officer. Second-quarter revenue is expected to total about $47 million, Vantive said.

Scan Outbound E-Mail

Many vendors are offering tools to scan incoming e-mail for viruses, but Electric Mail Co. in Vancouver, British Columbia, claims to be the first to offer a service that will scan outbound e-mail. The company's E-security service will block infected attachments by scanning the mail at its data center. Monthly fees start at $50 for 50 users.

Smart Phone Gets Memory Standard

Four semiconductor companies last week announced standard specifications for a multiple memory module used in smart phones. Sharp Electronics Inc., Mitsubishi Electric Corp., Hitachi Corp. and Intel Corp. make up the group, which hopes to create smaller, lighter and more reliable chips for smart phones and handhelds.

Net Protocol Drafted

Hypertext Transfer Protocol Version 1.1, which aims to significantly improve performance between Internet clients and servers, has reached draft standard stage with the Internet Engineering Task Force, officials announced last week.

Baseball Execs Spot All-Star Online Ballot Box Stuffing

Hackers' voting pattern anomalies tip off Major Leagues' network guardians

BY STEWART DECK

As gifted as Boston Red Sox shortstop Nomar Garciaparra is on the ball field, he isn't known as a great Perl programmer. But at least one of his Massachusetts-based fans has those skills. He tried to flood the online All-Star ballot with Garciaparra votes last week but ended up being ejected from the game by automated vote counters.

Alex Kam, director of new media for Major League Baseball in New York, said Chris Nandor of Carver, Mass., tried to circumvent the rules for baseball's online All-Star voting by sending more than 39,000 electronic votes for Garciaparra — far more than the 22 votes allowed each fan. (Nandor didn't return calls seeking comment, but he confirmed his participation via e-mail to *The Boston Globe*.)

What tripped up this and other ballot box stuffers were voting pattern anomalies, Kam said. The online votes were counted and scrutinized by SportsLine USA Inc. in Fort Lauderdale, Fla., which watched for votes that came in too frequently (one per second was far too fast), identical IP addresses on incoming messages and other out-of-the-ordinary characteristics.

Kam said Nandor's wasn't the only cheating attempt, "but we've outlined certain procedures that catch 99% of the potential problems out there."

Spotting nefarious patterns has implications far beyond online balloting. Protecting networks from hack attacks and detecting fraud depend on pattern recognition.

Marcus Ranum, CEO at Network Flight Recorder Inc., a Woodbine, Md.-based developer of network traffic analysis and monitoring tools, said algorithms can highlight anomalies — such as unusual connection request packets from a particular IP address during a hack attempt — but human intelligence should be added to double-check those statistical hiccups.

"But then, if you're dealing with a sophisticated attacker, they're going to guess what criteria you're going to use to determine an attack, and they'll work around that," Ranum added.

Cracker Tricks

Tricks that attackers might use include using different IP addresses, varying the types of attacks and tricking the system into thinking that *all* packet requests are dangerous, which eventually causes the network administrator to loosen restrictions.

Herb Edelstein, a data warehouse and data mining analyst at Two Crows Corp. in Potomac, Md., said pattern recognition is vital to uncovering fraud.

"Discovering the difference between normal and abnormal behavior is the basis of fraud detection," Edelstein explained. "Systems with high transaction volumes, [such as] credit-card systems and stock trading, depend on pattern recognition for fraud prevention."

Mercifully for Major League Baseball, the tainted All-Star votes didn't change the final results. Even without bogus votes, Garciaparra topped the polling among American League shortstops and will start in the All-Star game tomorrow at Boston's Fenway Park.

States Make Smooth Move Into Fiscal Year

But remain wary of potential Y2K problems on Jan. 1

BY PATRICK THIBODEAU
WASHINGTON

They aren't breaking out the champagne, but state information technology officials are clearly relieved that their financial systems began the new fiscal year this month with few year 2000-related problems.

But the success of those systems isn't necessarily an indication of how state Y2K repair efforts will fare Jan. 1.

"I don't see it as any prognosticator of January," said Brian Mouty, Colorado's year 2000 project manager. "The fact that we had a handful of systems that were successful doesn't mean we won't have problems later."

Most states began a new fiscal year July 1, moving from fiscal 1999 to fiscal 2000. Although state officials continue to warily eye financial reports for insidious, hard-to-detect data errors, the date change has been uneventful, according to interviews with officials in six states.

"It's a confidence builder, but not a reason to become cocky," said Kathy Donovan, Delaware's year 2000 coordinator. But she said she is nonetheless pleased. "Had this been disastrous, then certainly this would have made us very fearful of January."

Financial systems had a little bit of an edge on year 2000 work. Within the pyramid of mission-critical systems, financial systems, which balance books and issue paychecks, were among the first to be repaired. Systems that make projections had to be repaired well in advance of the fiscal-year date change.

But financial systems aren't in the clear just yet.

Although the applications recognize the year 2000, their interaction with operating systems, which work on a calendar year basis, could cause problems, said Mike Slater, West Virginia's year 2000 coordinator.

"The real acid test will come in January," Slater said.

State officials will face other milestone dates before Jan. 1 that will test the Y2K-readiness of their systems, including the start of the federal fiscal year Oct. 1. Many state systems exchange data with federal systems.

Pre-Y2K Worries

The July 1 fiscal-year rollover is only one of some date-related tests that state systems face:

Source: Computerworld research

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Continued from page 1

Vendors Vow to Open Directories

supporting characters to create a Directory Interoperability Forum, designed to support the adoption of existing directory standards, ease the development of directory applications and boost e-commerce. The forum is focused on advancing standards such as Lightweight Directory Access Protocol. A key forum objective is to ensure that any application written for an open directory will work with any other directory.

■ Microsoft bought Toronto-based Zoomit Corp., one of the industry's only metadirectory vendors, for an undisclosed amount. Microsoft will use the technology some time next year to make its Active Directory interoperate with other directories, like Novell Directory Services (NDS), as well as applications and other data stores, a spokesman said.

■ Novell is expected to announce at this week's Catalyst Conference '99 in Lake Tahoe, Calif., sponsored by The Burton Group, that it's using technology it gained with the May purchase of Orem, Utah-based Netoria Inc. to build a dynamic directory. Code-named Virtual Replica, the product was designed to be an intelligent offshoot of a metadirectory (see chart, page 1).

■ Novell is also expected to make an announcement concerning single sign-on this week. Single sign-on technology enables a user to log in once and be recognized throughout a network.

■ Entevo Corp. in Arlington, Va., is announcing this week that its DirectAdmin V3.0 will add support for Active Directory to its suite of support, which now includes NDS, Windows NT 4.0 and Microsoft Exchange. Version 3.0 was designed to enable an administrator to read, update and delete objects in various directories. In beta now, it's expected to ship in mid-August.

Interoperability Desired

Larry Gauthier, an analyst at The Burton Group in Midvale, Utah, said vendors are responding to users' cries for pan-directory capabilities, enabling many directories to automatically share and update information. He said the mindshare battle may slowly be turning to one of simple interoperability instead of vendors pushing one directory for every need.

"They're starting to realize that no vendor is an island," Gauthier said. "The average Fortune 500 company has 180 directories. Companies need to share information between all those directories, all those vendors."

It's going to be critical for the vendors to make their directories talk to one another, said Rob Singleton, supervisor of directory services in the enterprise security technologies department at Ford Motor Co. in Dearborn, Mich. "The idea of building one directory for a company has died," he said.

"Large companies could have many, many directory implementations from personnel applications to ERP directories to network operating system directories to e-mail directories. They don't understand each other," he said. "You have to hire people who can write custom code. It certainly can be expensive and lengthy."

Rudy Jabbour, integration manager at General Motors Acceptance Corp. in Detroit, said he needs to tie his directories together but added that he doesn't think it's going to be easy to get there. "It doesn't sound like the vendors are serious," Jabbour said. "If they were serious, [Microsoft, Novell and Netscape] would sit down together and talk seriously — together."

IT Interns Reaping Benefits

BY GARB COLE-GOMOLSKI

The days of summer IT interns working for peanuts and fetching coffee appear to be over, thanks to the tight information technology labor market.

This season, summer interns are being treated to a variety of perks once reserved for full-time staffers, including mentors, tickets to sporting events and free dinners, according to internship coordinators. In fact, some interns have it better than their permanent counterparts.

"Getting an internship is probably more competitive than getting a job here," said Mindy Buck, internship coordinator at Trilogy Software Inc., a software and consulting company in Austin, Texas. That's easy to understand: The company's 31 interns get free housing, a car allowance, pay and other perks, including a whitewater rafting weekend.

Observers noted that internships in some professions, such as law, have long been a summer courting exercise. In the IT field, internships have gotten cushier as the competition for workers has heated up, observers noted.

And IT interns aren't the only ones getting the royal treatment. A survey of more than 900 companies released last week by VaultReports.com, a New York-based Web site devoted to careers, showed that interns in most industries are enjoying plenty of perks.

Continued from page 1

GM Hits Bump

a dealership in Texas. GM had planned to use two special stores in Houston as part of a pilot test.

GM had created a site (*www.driverssite.com*) that Houston consumers would use to order and put a deposit on used vehicles and have them sent for a test-drive and potential purchase to one of the special GM stores. The stores wouldn't have inventory of their own.

"This is intended as an outreach program to customers that dealers wouldn't be getting today," said Roy Pikus, used-car brand manager at GM. "Our research showed that this is a viable concept, and we want to offer [consumers] a nontraditional buying experience." He wouldn't discuss specifics of the research.

GM's plan has drawn the wrath of the National Automobile Dealers Association (NADA), a McLean, Va.-based trade group that represents 19,500 U.S. dealers.

"Our position is that manufacturers shouldn't be competing with dealers," said NADA spokesman Mike Morrissey. "We're very concerned about this issue and believe it needs dealer involvement."

Pikus said GM met with Houston-area dealers a month ago to explain.

Rocky McCullough, general manager of Goodson Honda-Pontiac in Houston, attended the meeting. "They didn't ask for input and basically said, 'Here we come, get ready,'" McCullough said. "They're planning to get in direct competition with us, which I don't like because we have a partnership with them."

Dealers see threats from factory-owned dealerships and have worked with their legislators for protection, Morrissey said, noting that more than 40 states have franchise laws that either restrict or regulate such factory-owned establishments. The Texas law was passed late last month.

The issue extends beyond Texas and potentially beyond GM.

"Clearly, we see this as competition, as dealers have spent millions of dollars on their dealerships to showcase cars," said Tom Keery, owner of Frost Motors in Newton, Mass., and head of NADA's GM Committee, which represents 7,500 GM dealers. "Unfortunately, the decision was made without dealer input, which usually results in not the best decision. I'd like to work with them on how to make this work."

That may be the key to dealers' futures — and to that of sellers in other industries, said Barry Parr, an electronic commerce analyst at International Data Corp. in Framingham, Mass. "Ultimately, retailers can't win by fighting [the move to online direct sales], as customers will not stand for it," Parr said. "I expect efforts to restrict other areas such as online pharmacies, but buyers will win."

That's because online sales can be easier and cheaper for consumers, he added.

In the meantime, GM has until late this month to request a hearing on its Texas license denial. "We fully intend to get into this market and have every expectation we can come to a resolution and work this out," Pikus said. GM wouldn't say if the Houston pilot effort would eventually lead to a nationwide operation.

Ford Invests in Insurer's IT, Plans Policy Sales at Dealers

BY BOB WALLACE

Ford Motor Credit Corp. last week confirmed it has taken an unspecified equity stake in Insurance Holdings of America Inc. (IHA) to help both companies use information technology to advance their business efforts.

Ford and others invested $67 million in IHA, the bulk of which will be used to upgrade IHA's IT infrastructure, which will help Ford sell insurance directly to consumers at Ford dealerships.

"The way customers shop is changing," said Jim Moritz, Ford Credit's insurance director, in a statement. "Customers want choices." The company already offers insurance packages through its dealers.

The investment from others will be used to jump-start Beverly, Mass.-based IHA's ongoing effort to sell insurance through PCs at Sam's Clubs nationwide, said IHA CEO Brian McCarthy.

The Sam's project is four months behind schedule, in part because IHA's upgrade from SQL databases to more scalable Oracle Corp. databases took longer than expected, McCarthy said.

On the Ford front, IHA will provide the technology to support insurance sales in Ford dealerships. The scope of the project and the start date haven't yet been set, McCarthy said. Ford didn't provide specific details on the strategy behind its investment in IHA.

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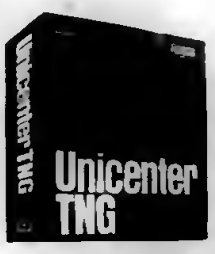

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E-Commerce App Kicks Off SAP Suite

After delays, full customer relationship management package due next month

BY CRAIG STEDMAN

SAP AG's effort to augment its R/3 suite with a new line of front-office applications continues to proceed in a series of fits and starts.

The German software vendor last week released the first member of the long-promised family of sales, marketing and customer service applications: a package that manages product configuration and pricing for companies that want to sell goods via the Internet.

SAP officials said a more complete set of customer relationship management (CRM) applications is expected to be announced next month, with shipments of at least some pieces to follow later in the year.

But SAP also disclosed that mobile sales and customer service packages due for release this month have been delayed until year's end.

Those products were supposed to be the first front-office applications out the door, but SAP said beta testers wanted tighter links with R/3 so end users could more easily pull information out of their corporate enterprise resource planning (ERP) systems.

Donovan Gou, an analyst at Aberdeen Group Inc. in Boston, said he expects SAP to eventually come up with a well-engineered CRM offering. But he added that it's relying on R/3 users to wait patiently and ignore vendors that are further along the front-office path, such as Siebel Systems Inc. in San Mateo, Calif., and ERP archrival Oracle Corp.

"SAP has been stalling the market for over a year by saying that products are coming and then pushing them back," Gou said. "I think the time frame [for doing that] is running out."

The tight ties between R/3 and the front-office applications that SAP is promising go beyond typical CRM capabilities, said John Bermudez, an analyst at Boston-based AMR Research Inc. For example, salespeople would be able to reach into R/3 to gather order-history records and other data for customers.

"No one else has tried that, not even Oracle," Bermudez said. But making the integration work has been "more difficult than SAP thought," he said.

George D'Auteuil, a vice president at SAP America Inc., said the mobile sales and service applications were delayed to improve user interfaces and to streamline data flow from R/3 to the packages. Those products have been in beta testing since March [News, April 5].

D'Auteuil wouldn't comment in detail on next month's planned announcements.

JUST THE FACTS

CRM Software

What is CRM?: Customer relationship management (CRM) software is a broad category of front-office applications that automate sales, marketing and customer service tasks. Sales force automation packages are the most prevalent example.

Who sells it: Companies such as Siebel Systems, Vantive and Clarify were first to market, but SAP, Oracle, Baan and other ERP vendors are now rushing to develop or buy CRM applications.

Potential benefits: Improved interaction with customers; the ability to tailor marketing campaigns to different groups of buyers; more efficient tools for sales forces and field service workers.

Singapore Bank Wrongly Debits Users

BY DAVID LEGARD
SINGAPORE

Consumers in Singapore saw a total of $235,807 wrongly debited from their bank accounts by a crash in the country's cashless point-of-sale system during the past week.

Many customers of the Development Bank of Singapore Ltd. (DBS) were told at retail outlets that their purchase transactions through the nationwide Network for Electronic Transfers (NETS) had failed. Unknown to those customers, the magnetic stripe, card-based system continued to debit the transaction amount from their bank accounts. Some were charged three times for repeated failed transactions; others were told they didn't have sufficient funds.

About 4,500 transactions were affected by the problem, which was caused by congestion in the bank's computer clearance system, said DBS President Ng Kee Choe. The NETS system is fitted with a time-out check, whereby any transaction not completed in 45 seconds is rejected.

A surge in NETS use overloaded the bank's clearance system, causing transactions to be rejected even though the bank had already debited customer accounts, officials said.

Ng said the bank will increase the number of communications channels among its own systems and those of NETS from 96 to 128. The bank will also allow a longer time for transactions to be approved. That will reduce NETS errors to the previous level of about one failure per 10,000 transactions, Ng said.

Although DBS said it reimbursed customers within three days and credited them with an extra 59 cents for lost interest, the crash has caused embarrassment to both the bank and customers in a country which prides itself on its advanced technology.

Legard writes for the IDG News Service in Singapore.

Fifteen Companies Approved to Sell Internet Addresses

New system allows for more global representation

BY JAMES NICCOLAI
SAN FRANCISCO

Fifteen more companies have been approved to compete as registrars for Internet addresses using the .com, .net and .org domains.

The Internet Corporation for Assigned Names and Numbers (ICANN) said last week the companies, including nine from the U.S., will be accredited July 16, when ongoing tests of the new Internet address system are expected to have been completed.

The new companies join the five accredited registrars that are carrying out the tests and another 37 companies that ICANN has said it will accredit when the tests are finished. A complete list can be found at *www.icann.org/registrars/accreditation.html*.

Until competition was introduced last month, registration for the three most popular top-level domains was handled exclusively by Network Solutions Inc. (NSI) in Herndon, Va., under a 1992 contract with the U.S. government. U.S.-based Register.com Inc., one of the five test-bed registrars, became the first company to compete with NSI.

The system is being introduced in part to provide more global representation among the firms that manage one of the Internet's most important resources — addresses.

The 15 approved include the following U.S. outfits:

- Affinity Hosting LLC in Gardena, Calif.
- Alabanza Inc. in Baltimore.
- Animus Communications Inc. in Oklahoma City.
- San Jose-based Concentric Network Corp.
- Domain Registration Services in Palmyra, N.J.
- EnetRegistry.com Corp.
- InterAccess Co. in Chicago.
- PSINet Inc. in Herndon, Va.
- TierraNet Inc. in San Diego.

Non-U.S. companies approved include Computer Data Networks in Kuwait, SiteName in Israel, EPAG Enter-Price Multimedia AG in Germany, Research Institute for Computer Science Inc. in Japan, TotalWeb Solutions in the U.K. and World-Net in France.

The nonprofit group (*www.icann.org*) was formed last year to sort out Internet management functions now handled by the U.S. government and its contractors.

Niccolai writes for the IDG News Service in San Francisco.

NSI Address Hit With Brief Hack Attack

Network Solutions became another hacking victim recently when two of its Web addresses were diverted to the Internet Council of Registrars' and the Internet Corporation for Assigned Names and Numbers' Web sites.

The incident occurred July 2 and was fixed as soon as it was discovered, according to Cheryl Regan, a spokeswoman at NSI. No other hacking attempts were made.

Ira Winkler, president of Internet Security Advisors Group, a consultancy in Severna Park, Md., said NSI is "clearly a prime target. [with] hundreds of possible attacks per day." Although NSI was on top of the situation and minimized any possible problems, "there will always be attacks that you can't plan for," and perfect security doesn't exist, Winkler said.

Based in Herndon, Va., NSI is charged by the U.S. government with registering Internet domain names (such as .org, .com and .net). But the Clinton administration has sought to end official government Internet oversight and is in the process of ending NSI's monopoly over domain registrations. – *Kathleen Ohlson*

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Where do you want to go today?

Red Cross Uses Net To Help Refugees

Database helps displaced Kosovars in U.S. camp find relatives in Macedonia, Albania

BY STEWART DECK

A MONTH-OLD Internet-based system built by The American Red Cross to help displaced Kosovo refugees find one another will become one of the building blocks of the organization's humanitarian disaster relief tools, the agency's CIO said last week.

With the assistance of Oracle Corp., the American Red Cross set up an Internet-accessible database filled with names, photos and other information pertaining to the identity of refugees coming to the U.S. through the main point of entry in Fort Dix, N.J.

Volunteers in the camp enter this information into an Oracle8i database that allows the refugees to specify the level of privacy they want.

The system lets seekers look for displaced persons by name, address or other types of personal data. Refugees can review all requests about their whereabouts before their data is given out.

The Displaced Persons Linking Center (*www.redcross.org/intl/request.html*) now has information on about 90% of the approximately 2,500 Kosovo families who came to the U.S. during the Balkans crisis, said Tom Woteki, the American Red Cross's CIO.

Privacy Ensured

"The challenges for us were figuring out what people needed and then making sure we protected people's privacy," Woteki said.

The system has helped a 13-year-old refugee locate her father in a Macedonian camp and an elderly man in the Fort Dix camp locate his son in Albania.

The application is straightforward, Woteki said. Data is input into the database, then queries are processed using string-matching algorithms that find similar-sounding names and words. The Red Cross chose an Oracle system because it had a long-standing relationship with the database provider, Woteki said.

One of the American Red Cross's long-range goals is to link the system with other refugee databases, including the International Committee of the Red Cross's Family News Network (*www.familylinks.icrc.org/balkans*) and the 2-month-old United Nations-sponsored identification-card database system organized by Microsoft Corp., IBM, Hewlett-Packard Co. and Compaq Computer Corp., among others.

The American Red Cross has further plans for the Displaced Persons Linking System.

"We provide relief for approximately 60,000 disasters annually in the U.S. including hurricanes, tornados and floods," Woteki said. "The system will certainly be a good tool for helping displaced people in many situations locate relatives and loved ones."

THE DISPLACED PERSONS LINKING CENTER helps refugees at a Red Cross tracing center in Fort Dix, N.J., find their loved ones

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Sharper Image Net Sales Soar

And at 7.7% of total revenue, top norm

BY NANCY DILLON

Sharper Image Corp. announced last week that its Internet sales last month were up 449% from a year earlier and made up a whopping 7.7% of the company's revenue for the month.

"At that level (of total sales), they're really getting ahead of most of the traditional retailers that have moved online," said Seema Williams, an analyst at Forrester Research Inc. in Cambridge, Mass. "But more than anything, this can be attributed to the good fit between their product mix and the majority of online consumers — affluent people and men."

Usually 1% of Sales

Last year, e-commerce sales accounted for 1% of U.S. retail sales revenue, according to Forrester. Other retailers have reported slightly higher revenue shares from their e-commerce sites. BMG Direct Inc. in Lillian, Ala., for example, says its online music revenue makes up 5% of its sales.

Jill Frankle, an analyst at International Data Corp. in Framingham, Mass., called the Sharper Image's Web revenue share "fairly sizable."

If Sharper Image "is really recognizing 7% of sales as online, they should be able to realize great efficiency, and this should improve their overall business model," Frankle said. "But how are they amortizing the cost of creating the site? Are the numbers really on comparable expenses, in terms of site development?"

"The numbers are straight online revenues from purchases," said Meredith Medland, director of the Internet division at Sharper Image.

Sharper Image reported June Internet sales of $1.6 million, up from $296,000 a year earlier. Total company sales were up 14% for the month compared with a year earlier.

Julia King contributed to this report.

Businesses Lean Toward Shorter IT Contracts

Gives them room to react to changing markets

BY BARB COLE-GOMOLSKI

When Hilton Hotels Corp. outsourced its information technology services in 1993, the company ran mostly on mainframes. And though the contract was scheduled to run through next year, it became outdated for Hilton's current client/server environment.

So CIO Joseph Durocher traded it in for a five-year deal. Just as technology life cycles have grown shorter, more firms are favoring shorter contracts for IT services. Shorter contracts let companies react to changing market conditions, such as the price of IT services, and ensure that their deals match their IT environments, users said.

"We keep contracts to one to two years," said Dianne King, information systems manager at Sebastian International Inc., a Woodland Hills, Calif., manufacturer of hair care products. "It's not because we are disloyal," King said; it's that technology changes too fast.

JUST THE FACTS

Shorter Term

Why companies favor shorter outsourcing contracts:

- Technological changes render long-term contracts out-of-date
- Short-term contracts mean vendors are asked to compete for your business more often
- Shorter contracts are more likely to align with current prices and service-level agreements for IT services

According to Input, a research firm in Vienna, Va., the average length of an IT outsourcing contract booked in the first half of this year was 5.4 years. Three of the four users interviewed for this story said they like to review contracts at least every three years.

"People are shying away from eight- to 10-year contracts," said Tom Mylott, an attorney at Gardere & Wynne LLP in Dallas who helps clients negotiate outsourcing deals.

"The typical CIO believes he or she can predict technology for about three years," Mylott said. "If a contract is longer, you're talking about an unknown technological future."

Of course, outsourcers like longer deals for their more predictable revenue stream. Outsourcers don't make much money on a contract until its later years, according to analysts. "Some of these long-term contracts involve up-front capital investments that are being amortized [by the vendor]," Durocher said. "A vendor can't be left on the hook for equipment it may have purchased."

Some companies are striking a compromise with outsourcers: signing long-term contracts with options to renegotiate key parts every few years. "We're happy to have a 10-year master contract," said Tom Rideout, senior program manager at Johns Manville International Inc., a manufacturer of building materials in Denver, which is in the midst of outsourcing desktop, server and network services. "But service levels and pricing will be looked at every three years."

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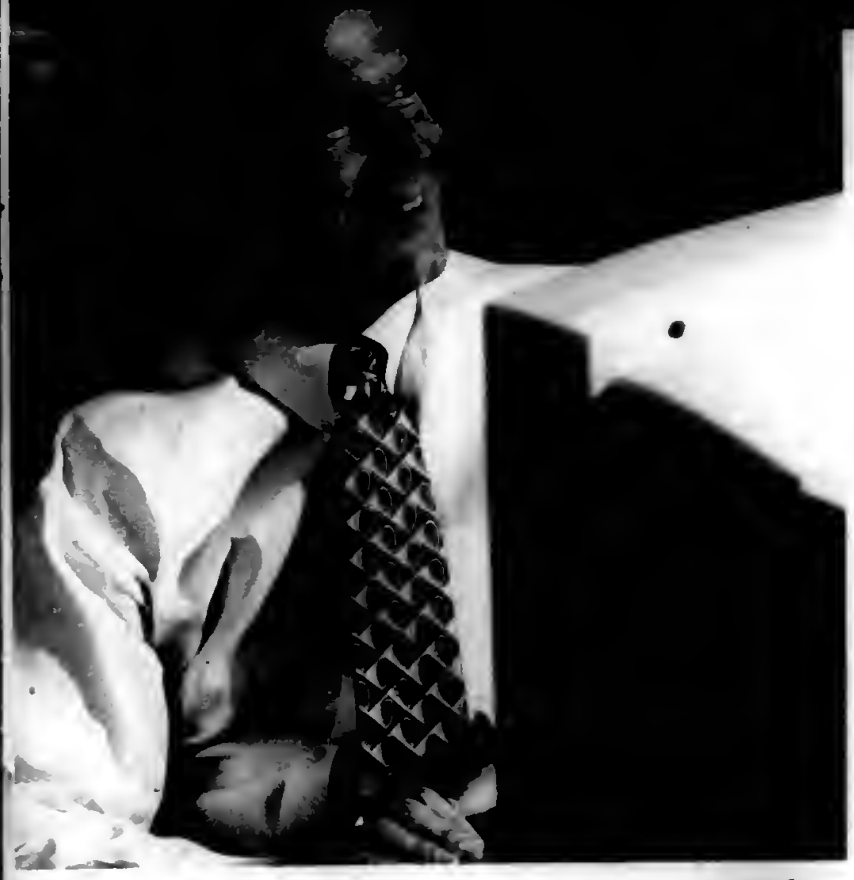

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Point of View

NT's role in the enterprise is changing

Windows NT

Barnesandnoble.com scaled the heights

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Adding second processors to existing network servers will result in similar performance improvements. But to get the best performance out of a multiprocessor configuration, Gould writes, primary software applications must be carefully designed and implemented in advance to take advantage of the multiprocessor hardware. He then offers tips to ensure a smooth process.

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Advantage

Point of View

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- Microsoft Windows NT Server 4.0
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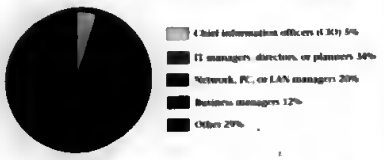
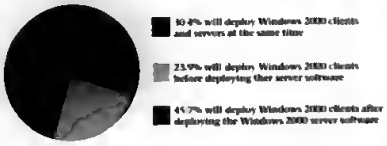
Survey respondents, broken down by title



Early adoption plans of large companies



Source: ***International Data Corp. Windows NT Server Adoption Study***

Produced by: COMPUTERWORLD ENTERPRISE BUSINESS SOLUTIONS

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Coming up in Windows NT Advantage

The next issue of the Web magazine Windows NT Advantage will come online July 15th. Inside that issue will be features and columns such as:

- **How to perform a quick ROI on a migration to Windows NT**

  To ease this crucial IT chore, you must first pinpoint the business reason for doing an ROI, then choose the migration path.

- **Beyond ROI**

  Your ROI is complete, but is the process over? Far from it, says Steven Gould in his upcoming Enterprise Wise column.

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- **Lifecycle management: Saving precious resources**
  From installation to termination, the hidden costs of running PCs can gobble up IT resources in a hurry. But enterprises are finally getting some high-tech help.

- **IDC looks at Windows 2000 migration**
  Does clustering provide all the answers to performance, scalability and reliability of Windows NT Server today, and Windows 2000 Server in the future? No, but you can learn to use it wisely.

- **E-commerce: Changing your life**
  What are the top 10 ways e-commerce will change your life in the enterprise? The answers may surprise you.

Survey respondents, broken down by title

Early adoption plans of large companies

Source: ***International Data Corp. Windows NT Server Adoption Study***

Produced by **COMPUTERWORLD** ENTERPRISE BUSINESS SOLUTIONS

IDC

Compaq in Balancing Act On Europe/Asia Direct Sales

Move requires keeping existing overseas resellers happy

BY MARY LISBETH D'AMICO
MUNICH, GERMANY

AFTER MONTHS of what observers saw as waffling, Compaq Computer Corp. officials said they will move seriously into direct sales in the Europe, the Middle East and Africa, selling to corporatations and consumers over the Web starting this fall.

But in so doing, Compaq must move toward the direct-sales model without angering its valuable base of 25,000 resellers in the region.

Globally, Compaq has been criticized for missing the boat on selling directly to end users, but the April departure of CEO Eckhard Pfeiffer may have paved the way for a change, analysts said.

Compaq already sells high-end systems packaged with services directly to large corporate accounts in the region. Those sales, however, stem solely from the service divisions of the two companies Compaq acquired, Tandem Computers Inc. and Digital Equipment Corp., according to Compaq spokeswoman Virginia Cartwright.

In Europe, the Middle East and Africa, Compaq has largely shied away from selling lower-end computers directly to companies, though, and offers direct sales of PCs and PC products to consumers only in isolated European markets such as Spain.

Just what share of its products will be sold directly is still unclear. About 25% of the information technology market in the region is direct sales, said Kasper Rorsted, the new head of Compaq's PC and e-commerce group in the region.

The group Rorsted was named to head last week will shore up Compaq's efforts to give customers choices in buying hardware directly, via reseller or through some combination of the two, Compaq said. It brings together Compaq's commercial PC business with its e-commerce activities for selling computer products over the Internet.

Compaq's moves were a response to pressure from Dell Computer Corp., said Brian Pearce, an analyst at International Data Corp.'s (IDC) European group. Compaq ranked first in Western Europe in the number of units shipped last year — with IBM and Dell second and third, respectively — but Compaq hasn't kept up with Dell's growth.

D'Amico writes for the IDG News Service in Munich. Jana Sanchez in London contributed to this report.

Ready to move beyond the Y2K hysteria?

Calm voices tell you how at www.sas.com cw/beyond

SAS

MCI Forms International Service Unit

Goal is single contact for equipment, support

BY BOB WALLACE

Current MCI WorldCom Inc. customers stand to benefit from the creation of a unit designed to provide a single point of contact for international services and outsourcing.

The Global Solutions unit, formed July 1, will provide multinational companies with a global account group that reconciles the separate — and often competing — sales and services staffs of carriers MCI has acquired, such as WorldCom Inc. and UUnet Technologies Inc.

"This is a further streamlining of MCI's internal operations, which will enable them to think globally and act locally," said Don Lietke, CIO at Packard Bell NEC Inc. in Sacramento, Calif.

The Reston, Va.-based unit will handle 350 MCI WorldCom international customers and call on a worldwide staff of 2,000 sales and support specialists, the company said. "Now users have one place to go for international transport and managed services from MCI," said Melanie Posie, an analyst at International Data Corp. in Framingham, Mass. "There's nothing earth-shattering here. It's just better customer service."

"We had several different sales teams, [but] this is a more cohesive approach to handling international companies," said an MCI spokesman. He noted that the carrier already had been offering managed services and outsourcing outside the U.S.

Fiction Site Spurns Surfers Who Use Ad-Blocking Apps

BY NANCY DILLON

People who aren't willing to put up with Internet advertisements aren't going to get their Internet content for free. That's the message Mind's Eye Fiction *(www.tale.com)* is sending to its Web audience.

Industry analysts said they agree with the concept, but not with the tack being taken by the Houston-based fiction publisher.

Mind's Eye said last week that a new JavaScript program on the company's Web server will prevent visitors who use ad-blocking software from reading stories' endings for free. Readers who keep their ad-blocking software turned on can access the site's new pay-per-view e-commerce system and pay 16 cents per story.

"On the Internet, you pay by paying attention," said Ken Jenks, editor in chief at Mind's Eye. He said it isn't fair that between 3% and 4% of Mind's Eye's 2 million annual visitors use ad-blocking software.

"I applaud [Mind's Eye's] initiative to fire a shot across the bow of ad-blocking software," said Rich LeFurgy, chairman of the nonprofit Internet Advertising Bureau in New York. "But ultimately, a pay-for-content model is not sustainable on the Web."

LeFurgy said that consumers aren't going to adopt ad blocking at a meaningful rate until it's a default feature of Web browsers. Ad-blocking tools have been around for two or three years without gaining much headway, he added.

One maker of ad-blocking software, Seattle-based WRQ Inc., defended its @Guard ad-blocking product, claiming that it contributes to consumer choice. @Guard's ad-blocking function "is very selective. It can be turned on or off with a single click," said Anne Marshall, product marketing manager at WRQ.

'Shaky' Global One Says Its Network is Y2K-Ready

But analysts predict money-losing multinational alliance likely to break up

BY BOB WALLACE AND JEANETTE BORZO

GLOBAL ONE Communications Inc., a three-way telecommunications alliance, last week claimed that its international network is year 2000-ready. But there are signs that the money-losing alliance itself may fall apart.

Global One, based in Brussels and Reston, Va., is an alliance among Deutsche Telekom AG, France Telecom SA and Sprint Corp. that offers voice, data and Internet Protocol (IP)-based services primarily to multinational business customers. It has never been profitable and isn't scheduled to be until 2001 or 2002, a Sprint spokesman confirmed.

AT A GLANCE

Company: Global One Communications Inc.

Partners: Deutsche Telekom, France Telecom, Sprint

Employees: 3,800

Launched: Jan. 31, 1996

1998 revenue: $1.1 billion

Franco-German Dispute

"Everything went so shaky ground after France Telecom sued Deutsche Telekom for breach of the alliance agreements," said Klaus Czerwinski, a Global One spokesman, referring to a dispute over the German firm's failed attempt to buy Telecom Italia. "The alliance might not continue in its form as far as its owners are concerned."

If an alliance member leaves, it must continue to provide services for two years or until a suitable replacement is found, Czerwinski said. "There's dozens of new carriers out there."

Two weeks ago, Global One's president and CEO Gary Forsee announced that he will leave the company's top job on July 16. The resignation sparked more speculation that the alliance is on its last legs.

"It's likely to die a slow death. Losing a member, not breaking even or Sprint being bought could bring Global One down," said Christine Heckart, director of consulting at TeleChoice Inc. in Boston.

SPRINT CEO William Esrey's efforts initiated three-way talks

Sprint hopes the trio can reconcile things internally and agree on one strategy.

Uniting Goals

Concerned about the future of Global One, Sprint CEO William Esrey earlier this year sent letters to his French and German colleagues seeking closer alignment of their goals. That triggered the start of three-way talks on "how to operate in the future," said Bill White, a Sprint spokesman, who couldn't say when the talks will conclude.

As for the year 2000 issue, Global One said its backbone, voice, data, IP and Asynchronous Transfer Mode networks have passed a Y2K-readiness inspection.

Equipment testing was done in France, Germany, the U.S. and Canada, the company said. However, Global One acknowledged that some carrier networks it uses to serve certain countries won't be Y2K-compliant in time, so it has developed unspecified contingency plans.

Global One claims to have 1,400 network nodes in 65 countries and reported 1998 revenue of $1.1 billion.

Borzo writes for the IDG News Service in Paris.

R&D Credit Expires as Congress Mulls Law

Economy, fed surplus create climate for permanent extension

BY PATRICK THIBODEAU
WASHINGTON

For nearly two decades, the research and development tax credit beloved by high-tech companies has drifted in a legislative Bermuda Triangle. It's usually on the political radar, but occasionally it disappears, as it did June 30.

The R&D credit, which provides financial incentives for companies to invest in research, expired last month. And this isn't the first time that has happened.

REP. ZOE LOFGREN has asked for a vote on the tax issue this week

Since establishing the tax credit in 1981, Congress has kept it on a short leash. Extending the credit has meant offsetting losses of tax dollars in other areas of the federal budget. A one-year extension of the credit is estimated to cost $20 billion. The credit has been renewed nine times, for periods ranging from one to four years.

But there's now a bipartisan push in Congress to make the tax credit permanent. A strong economy and a federal budget surplus are helping to create a favorable climate for a permanent extension.

Rep. Zoe Lofgren (D-Calif.), whose district includes Silicon Valley, has asked the Republican leadership to schedule a vote this week on the issue.

Industry Seeks Certainty

Industry groups, especially those representing automotive, information technology, aerospace and biotechnology companies, say a permanent tax credit would offer them certainty about the future and encourage additional R&D spending.

Most R&D projects require multiyear investments, and the lack of predictability about the tax credit has made "it impossible for firms to incorporate the value of that credit into their planning," said Gretchen Beyer, policy director at the bipartisan Technology Network lobbying group in Palo Alto, Calif. "It puts a real hardship on our companies."

Pays for Itself

A study last year by Coopers & Lybrand LLP, which is now part of PricewaterhouseCoopers, said for every $1 the U.S. spends on the tax credit, it gets $1.75 back in tax revenue through additional output. "The credit actually pays for itself," said John Hakken, who worked on the study.

At the minimum, Congress is expected to extend the credit and is likely to make it retroactive to June 30. Meanwhile, trade groups say they find the battle frustrating.

"The great irony here is that no one opposes it," said Harris Miller, president of the Arlington, Va.-based Information Technology Association of America.

BRIEFS

Yahoo Posts Big Profit

Internet portal Yahoo Inc. in Santa Clara, Calif., last week reported second-quarter profits and revenue that surpassed Wall Street predictions. Excluding the cost of buying Internet companies like GeoCities, Yahoo said it earned $26.3 million in the quarter ended June 30. That was up from a profit of $1.5 million in last year's second quarter. Revenue rose 156% to $115.2 million from $45 million.

EDS Names Chief Of U.S. Operations

Electronic Data Systems Corp. in Plano, Texas, last week named Douglas Frederick as executive vice president of U.S. operations. Frederick joins EDS from Baan Co. in the Netherlands. He will be responsible for sales, delivery services and relationship management for U.S.-based clients, excluding General Motors Corp.

Micron Moves Into Web Hosting

PC maker Micron Electronics Inc., taking its first step away from the sluggish PC market, last week announced a plan to acquire Web hosting company NetLimited Inc. in Los Angeles, which operates under the name HostPro. Micron, based in Nampa, Idaho, didn't disclose the terms. HostPro clients include Caesar's Palace, Xerox Corp. and CBS.

Short Takes

SUN MICROSYSTEMS INC. in Palo Alto, Calif., last week named Jim Barksdale to its board of directors. Barksdale is the former president and CEO of NETSCAPE COMMUNICATIONS CORP., now part of AMERICA ONLINE INC. and a close ally of Sun. . . . NEW ERA OF NETWORKS INC., an application integration software vendor in Englewood, Colo., last week said it expects to report a second-quarter loss of $3.7 million to $8.6 million because of lower-than-expected sales. . . . ADAPTEC INC. in Milpitas, Calif., last week named former COMPAQ COMPUTER CORP. executive Robert Schultz as its chief operating officer.

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Complete specs

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PAUL GILLIN

Strikethree.com

JOE BUCK: Well, Tim, it's been an interesting game so far, the first All-Star Game ever played in which the Internet has been fully integrated into the action.

TIM McCARVER: You're right, Joe. And we've got a real barn-burner. The turning point was Ken Griffey Jr.'s home run, ruled fair by a slim 52% to 48% majority of the fans.

BUCK: Jim Thome takes a fastball low.

McCARVER: Joe, 73% of the fans think that pitch should have been a change-up.

BUCK: Thome made the team thanks to a surge of more than 13 million Internet votes in the last week of voting. But they're a little suspicious, Tim, since 12 million of those votes came from a single IP address!

McCARVER: The Cleveland fans certainly have been aggressive on the Internet, Joe. They nearly succeeded in getting Bob Feller on the roster, despite the fact that he retired in 1956!

BUCK: Thome hits a grounder to short, and Barry Larkin throws him out easily.

McCARVER: Joe, a number of National League players are leaving the field, thinking that was the third out.

BUCK: Well, the scoreboard says the inning's over, Tim. In fact, it says it's the seventh out and the American League is leading 323-0!

PAUL GILLIN is editor in chief of *Computerworld*. You can contact him at paul_gillin@computerworld.com.

McCARVER: Ha-ha! That's got to be those crazy Cleveland fans again, Joe. No doubt they've hacked into the scoreboard computers and made a little mischief!

BUCK: We've got a delay before the next batter, Tim. Cal Ripken Jr. is evidently waiting for Windows 98 to reboot.

McCARVER: Well, he could be there a good, long time. The umpires, meanwhile, have asked the fans to vote on whether the game is moving quickly enough.

BUCK: And by a 62% to 38% margin, Tim, they're saying it is. But now a renegade group has started a spam mail campaign trying to convince viewers to switch over to a *Spin City* rerun on ABC.

McCARVER: Bet the e-mail will be flying in Commissioner Bud Selig's office about this tomorrow, Joe!

BUCK: Let's just hope the commish hasn't developed too much of an "attachment" to this Internet idea, Tim!

THORNTON MAY

Directors' boards are clueless about the Internet

RALPH WALDO Emerson once observed that "we learn geology the morning after the earthquake." The emerging digital economy, and how it's affecting boards of directors, is being studied post-Web-quake by some top business scholars. Their conclusion: The directors of most mainstream companies don't understand the implications of the Internet, aren't aware of their ignorance and are taking no steps to remedy their dangerous strategic blind spot.

Richard Nolan, a Harvard Business School professor, observed that the boards of directors of high-multiple Internet start-ups don't look, act or think like the boards of directors of incumbent industry players.

THORNTON MAY is vice president of research and education and the corporate futurist at Cambridge Technology Partners Inc. in Cambridge, Mass. Contact him at tmay@ctp.com.

For one thing, these "nucos" (new companies) aren't grounded in the vision-limiting experience of the industry they're intent on transforming. They're visitors — *bezoekers*, in Dutch— carrying with them new, Web-enabled business models. The unabashedly innovative mental models of nuco board members are driving many industry incumbents *berserk* and creating competitive difficulties.

In his new book, *Renewable Advantage: Crafting Strategy in Economic Time*, Carnegie-Mellon Prof. Jeffrey Williams documents that forgetting can be more difficult than learning. Williams' data seems to indicate that the ability to forget, "unlearn" or move your company around a forgetful curve is very difficult — and a clear indicator of future performance. Boards of directors need to be able to learn new things (such as how to create and compete with IT), and need to be able to forget how they operated in the past.

William Ouchi, founder of the Director's Institute at UCLA, is starting some interesting work on how boards organize themselves to take full advantage of technology innovations. The institute's research indicates that most boards don't focus on the IT implications of rearranging organizational charts.

The Director's Institute's data doesn't reveal rapid changes in most boards' behavior. They don't appear to be in a real hurry to change their composition or their technology governance practices. In a digital economy in which IT investments are becoming material (globally recognized financial services firms now routinely

White Paper

Knowledge Management:
Know Where it's Heading

IDC

KNOWLEDGE MANAGEMENT TO YOUR COMPANY'S NEEDS

By Gerry Murray IDC

Although companies share common goals when it comes to implementing knowledge management (KM) systems, when it comes to deployment, they have a wide variety of approaches. This is what International Data Corp. (IDC) learned in six months of profiling companies implementing KM systems. Consider five scenarios.

- A government agency deploys a search engine on its Web site to give citizens direct access to information on motor vehicle licenses, hunting/fishing licenses, healthcare, laws and parliamentary records
- A product consulting company deploys off-the-shelf project management, spreadsheets, presentation software and custom applications to improve project management, documentation and quality of customer deliverables.
- A systems integrator uses Microsoft Exchange public folders to store and share audio/video files describing customer application deployments. Custom enhancements enable search and push of this material to consultants as they work.
- A reinsurance firm uses a third-party product to profile 60 databases to create links between silos of information.
- A large software company (not a KM vendor) uses a combination of intranet portals, push technology and a team of content managers to create an "infinite knowledge loop" between product marketing, customer support, documentation and partner training programs

Each company's objective for KM included better customer service, more efficient distribution of information, new revenue opportunities and lower costs. But as for the systems used to achieve these goals, it's like the proverbial blind men describing an elephant.

What KM means to your company depends on four factors: culture, information technology, business model and objectives. If the information superhighway is a metaphor for the knowledge economy, KM is the diamond lane. The lead car in this lane is your corporate culture—it determines how fast you can go. The second car is technology—it can push your culture but at the risk of crashing and burning. The complexity of your business model determines how many hills and

[illegible] Supercomputing [illegible] provides market insight to customers [illegible] systems integrators, VARs and investment firms. His e-mail address is [illegible]

curves you must negotiate. Your objective is a landmark you want to see along the way.

How you approach KM should be determined by questions such as:

Culture

1. How much collaboration occurs across teams?
2. Does your compensation system primarily emphasize individual or company performance?
3. What are peer recognition programs based on?
4. How often are people moved from one department or region to another?
5. How does your company learn from failure?

IT

1. How homogeneous is your IT infrastructure?
2. Do structured and unstructured systems share directory, administration or meta data?
3. Do application processing systems support standards or proprietary formats?
4. What is the state of corporate intranet(s)?
5. Are there electronic links to customers and suppliers?

Business Model

1. How complex are your products and/or services?
2. How complex is your supply chain?
3. How complex are your markets?
4. What is the average product life cycle?

Objectives

1. More responsive to customers
2. Supply chain efficiency
3. Proliferation of best practices

Obviously, there are many more questions to be addressed. However, this methodology can be applied to the organization as a whole and to individual departments. As a result, the KM implementation can be targeted at the right problem, and scoped accordingly.

For instance, an organization with a sharing culture, integrated IT systems and a straightforward business model can likely tolerate a high degree of change. One with many layers of bureaucracy, multiple e-mail systems and complex sales cycles will have to start with a project of limited scope. And if a company has significant culture issues coupled with cutting edge technology and a streamlined business model, the KM implementation may take the form of consulting and training in lieu of major IT investments.

The companies on p. 2 started at very different points on the KM spectrum. The government agency had strict

Gerry Murray is the Director of Knowledge Management research at International Data Corp., an IT market research and consulting firm with more than 500 analysts in 42 countries. He has just completed a six-month evaluation of the knowledge management market and published his findings in a 275-page report entitled Sourcebook for Knowledge Superconductivity. He provides market insight to customers, vendors, systems integrators, VARs and investment firms. His e-mail address is gmurray@idc.com

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Year 2000: A Very Good Year, Maybe

Technology investments generally provide only short-term competitive advantage, inasmuch as systems can be replicated by others. However, the y2k problem, coupled with the difficult learning curve for KM, creates a one-time opportunity for y2k-compliant companies to gain a larger, longer lasting edge, especially in service-intensive industries. Bottom line: If you are y2k-compliant, you should be investing in KM now to accelerate both the culture and technology cars while your competitors are stuck idling in traffic.

Industry Solutions

Knowledge Management

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Today's businesses know that the key to success lies in unlocking the knowledge within the company. Now, more than ever, businesses need a comprehensive Knowledge Management platform that offers rich collaboration, enterprise-wide search and delivery of information, large scale document management, in-depth business intelligence on the business, and flexible workflow and tracking applications.

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Microsoft Exchange Server

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Microsoft SQL Server™ 7.0

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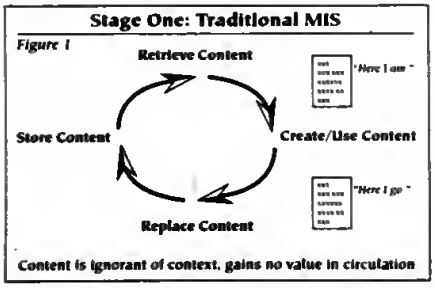
cultural and protocol issues around internal knowledge sharing, a simple Web site and a mandate to give citizens faster access to information. It started with a customer facing function. When it began offering customers a Web site with a search capability, that represented a big jump in the efficiency of information distribution.

In contrast, the software company has a dynamic culture, sophisticated IT and short product life cycles, so it decided to coordinate product-related functions. Note that it did not start with core engineering or sales, but with several communities that can act as conduits for knowledge sharing between them.

IDC has identified three stages in evolving an IT infrastructure to a knowledge orientation. In stage one, traditional MIS approaches capture, store and retrieve information purely on its face value (Fig. 1). Systems typically have tremendous management and throughput capabilities while information is within a given domain, but once an object is put into general circulation, the system gains no new value about who, what, where, when, why and how a particular piece of information is used. Without this meta information, we can't determine the business conditions in which that object would prove useful to others.



Source for all three diagrams: International Data Corporation, 1999

For example, a salesperson for a telecom firm who is to make a presentation to a global account would have to gather current account and product information from as many sources they can think of: other sales reps, product managers, marketing, pricing, accounting, competitive news sources, the Web, etc. Unless they ask, they will not discover whether any new products/services, pricing programs, sales techniques or problems might be relevant to that sales meeting.

Stage two provides a layer of intelligence that gathers data about where information goes, who accessed it, what process or type of project it is used for, what customers or products it pertains to, etc. In this model, the system or object learns about where it goes, what it is related to and who is an expert in the topic it references. This way the information itself starts to become a conduit for the context in which it has the most value. Fig. 2 depicts this model.

To continue our example, if marketing approves a new cell phone promotion for global accounts, that piece of information is tagged as being relevant to anyone interacting with a global account. When the sales rep queries the system to plan a strategy for a sales meeting, this information is delivered on the basis of a match between the context of the sales rep and the context tags for the marketing material.

Fig. 3 illustrates the next stage of evolution. The system

COMPUTERWORLD

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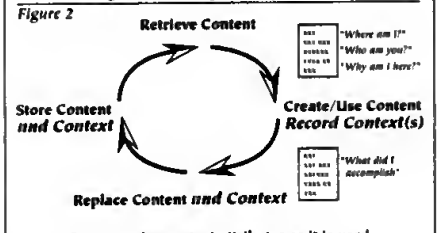
now has the ability to not only tag information, users and processes with contextual information, it can actually monitor contexts as they develop in realtime. So when the sales rep makes the entry for the call in their electronic calendar, the system proactively delivers a link to all the relevant information. This does not imply that the sales rep will never have to query the system manually, but that there are now two methods of ensuring that people are aware of new information that they would not even know was available.

Stage Two: Capturing Context

Figure 2

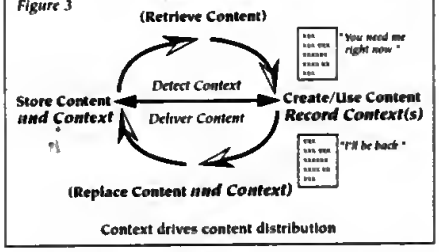


Content gains context attributes as it is used

This is where the market for knowledge-based solutions is headed. While it is possible to custom build many of the basic requirements for KM today, it is at best a long and expensive endeavor that is difficult to scale across the enterprise. Therefore, most current KM implementations take one of two approaches: knowledge-enabled line of business solutions, or enterprise information portals (EIPs). These approaches are complementary, and in the long run will merge into what IDC calls a knowledge ecosystem. This ecosystem involves coordinated administration, security and processing across databases, transactional and messaging systems as well as external content. Unless an integrated suite of back-end capabilities that has workflow rules is already in place, this will usually require the deployment of middleware to coordinate links between transaction processing systems.

Stage Three: Knowledge Management

Figure 3



Context drives content distribution

Middleware solutions will provide two of the most critical functions in a KM ecosystem: capturing workflow context while the process state is in effect, and linking proprietary systems to the Web. Context properties will be shared through a context management layer that features the ten key KM capabilities discussed in the White Paper on "The Power of Sharing Knowledge," in the 6/21 issue of *Computerworld*.

Meanwhile, EIPs will rapidly evolve into the de facto standard desktop to access the content, capabilities and colleagues necessary to do work. In a mature KM ecosystem, the network is the computer and the portal is the desktop.

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speod 20% to 40% of their total annual operating budgets oo IT), behavioral inertia will expose incumbent enterprises to the predations of more tech-savvy nucos. The resulting performance and share-price declines could stimulate litigious shareholder action.

This research points to one conclusion: The time has come for boards of directors to create an environment conducive to, and demanding of, more technologically savvy attitudes and practices. Companies need boards that are up to the challenges of the Internet age.

Boards need to do the following three things:

1. Immediately add new, tech-savvy DNA to the board. Initiate a search for new board members with an executive search firm today.

2. Upgrade the DNA on the current board. Hire a technology coach for each board member.

3. Collectively educate the entire board on the competitive implications of IT.

Your shareholders will thank you, your customers will thank you — and your kids will no longer laugh at your lame attempts to keep up.

DAVID MOSCHELLA

Bye, Big Tobacco. Hello, Big IT?

NOW THAT it's all but certain that legislation will be signed into law limiting liabilities due to year 2000 problems, are you pleased? Although the impending Y2K act consists of many good intentions, my basic gut feeling is still clouded by the long shadow of special interest privilege. Fewer lawsuits might well be good for the IT industry, but powerful and uncontrollable forces have now been set in motioo — and we may not like where they eventually take us.

I can think of three main reasons to support the bill: First, America's legal system has been overrun with suits trying to wring enormous sums of money out of what often are the most dubious of claims, and the less our field has to do with all of that, the better. Second, the bill's provisions seem generally workable and reflect a sincere attempt to get past this problem without crushing the rights of IT customers. Third, Congress has probably succeeded in preventing that issue from spoiling our industry's current momentum.

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Balancing those positives are three equally strong negatives: First, those business that have done the least to protect their customers stand to benefit the most, often a sure sign of bad legislation. Second, the bill makes no distinctioo between Y2K problems stemming from the 1960s and '70s vs. those originating in the 1990s; the former are largely forgivable but the latter are clear evidence of negligence. Third, limiting liability before a single important suit has actually been contested sets a potentially dangerous precedeot.

But because almost all legislatioo has its pros and cons, it's the overriding message of the bill that's ultimately the most interesting and problematic. Congress is implicitly saying that, although smokers have been warned about the dangers of tobacco for more than 30 years, cigarette companies still are liable wbeo people smoke and get sick. Similarly, though everyone knows that guns are inherently dangerous, gun vendors can still be held liable even when their products are deliberately misused.

In contrast, many IT customers had oo idea that the products they were buying had built-in year 2000 problems, but often their vendors did. Thus, the Y2K situation is the opposite of tobacco and guns in that the customer has usually done nothing wrong, while the vendor is ofteo entirely responsible. Yet it's only with Y2K that Congress provides the vendor with a special layer of protection. Why such blatant favoritism?

You already know. IT companies are the heroes who returned America to prosperity. In contrast, Big Tobacco and the gun lobby are regularly demonized as almost the embodiments of evil, for whom no punishments are apparently enough. And, of course, the IT industry is now a huge and glamorous source of campaign contributions.

That heady combination of heroic status and great riches will tempt the industry to push for all sorts of special influence. In areas such as encryption or taxation, that will often be for the better. But when it comes to copyrights, privacy, and similar issues, consumers might have a different reaction.

In the long run, special favors for special industries usually do more harm than good. Let's hope that Y2K protection proves the exception, not the rule.

READERS' LETTERS

Good riddance to server-side licensing

I DON'T get it. Perhaps I'm missing something.

Although license maoagement at the user level is a royal pain, my memories of server-side licensing are far less rosy than those I read in your recent article "License Change Eyed for Win2K." [News, June 28].

Not too long ago, if I had my workload spread over three Novell servers and I had 101 users on my LAN, I had to buy three 250-user licenses for the servers. In effect, I had to pay for 750 users of capacity when I had 101 actual users because I chose to architect my LAN a particular way.

Years ago, minicomputer and mainframe vendors would set their license revenue based upon the size of the server that it was running on. That meant that a Cobol compiler would cost, say, $2,000 for a very small minicomputer and $200,000 for a very large minicomputer or small mainframe.

If I had one or two people using the Cobol compiler oo the big machine, I had to pay through the nose for the software! It didn't make sense.

The entire, PC-centric paradigm shift emanated from the ability to scale down the cost of computing to the user level. A single user could buy a PC for less than $5,000. A Pascal compiler cost $29.

I have no desire to return to the server-centric licensing model of five years ago, nor the time-sharing model of 10 years ago.

My vote is to keep the licensing structure with a reasonable base server license charge and a small fee per user for server-based applications. For clieot-based applications, keep the clieot licenses.

Let's have more choices instead of swinging the pendulum back and forth between business models every five to 10 years.

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Right tactics can defang e-mail attachments

PAUL GILLIN stated in his June 21 column ["Peril by E-Mail," News Opinion], "You can't reasonably filter and test every attachment that comes into the server." We have Trend Micro's InterScan Virus Wall installed on our Exchange Server, and it does exactly that.

It is, of course, only as good as your most recent virus definition file (.dat), but scheduling the auto update to occur at 5 o'clock every morning saved our butt during this last episode.

Within the first few days, it had successfully found Worm.ExploreZip three times and removed the attachment before delivering the e-mail. InterScan then notified the sender, recipient and e-mail administrator of its actions.

If our update had been delayed by one day waiting for someone to get it, or only updated weekly or monthly, as is often recommended, we would have been up the creek.

Larry Caltagirone
MIS manager
Randell Manufacturing
larryc@randell.com

THE DANGER from attachments is so serious, it would behoove all IT departments to educate employees or restrict them from sending most, except within an intranet.

I know you have received attachments similar to the following:

An executable program that ends up being just a picture that should have been sent as a JPEG or GIF; a Word document that contains so little text that it should have been included in the e-mail message itself; or an attachment that requires a special program to open — with the sender assuming that all recipients have the program.

Gordon Hesketh
Lousiana Chem. Equipment Co.
LaPorte, Texas

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931, Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

BILL LABERIS

Lawyers lament: 'Don't take away my Y2K!'

THE FOLLOWING is a transcript of a recent board meeting at the venerable New York law firm of Skrewum, Fleesum & Billum, moments after Congress passed legislation limiting Y2K lawsuits.

Skrewum: Gentlemen, we have a problem. This is nothing short of a frontal assault on our constitutional rights to earn a fair living. Besides, what the heck are we going to do with this huge Y2K practice we've built during the past two years?

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Fleesum: I can't believe what Congress did, and most of them are lawyers, too. Couldn't the Clintons have helped out here? It's not like the Trial Lawyers Association hasn't greased their palms a few million times.

Billum: Well, the prez is on our side, but he just isn't as potent as he once was. The rest of them caved into the big-money interests and the IT vendors. All we wanted to do was represent the little guy. And maybe get 25% of the total haul for ourselves. Considering the suits could have run as high as a trillion dollars, we were talking pretty serious cash! What exactly has Congress done?

Fleesum: They have the audacity to try to limit or eliminate frivolous lawsuits — our bread and butter. They are going to cap the size of punitive damages suits for small businesses. And they're going to give companies 90 days to fix Y2K-related problems before we can sue.

Billum: Ninety days? The bastards! Even Dilbert can fix a problem in 90 days once he knows what's broken. So the IT nerds put in the repairs, the systems work fine and everything's hunky-dory. That will leave us . . .

Skrewum: Nada. Bupkus. Zippo. Zilch. We've got a SWAT team of 120 Y2K legal vultures poised to pounce, and Congress has just taken away their meal ticket. Gentlemen, we need to develop a redeployment strategy. One that reflects our moral compass setting and abiding concern for the little guy in society.

Fleesum: I got it. Let's file a class-action suit against IT workers for being a general nuisance. You know, the way they dress, the foods they eat while working late, the arcane way they talk.

Billum: That could hurt our image of being a law firm of the little people.

Skrewum: Let's sue Microsoft. Everyone else has.

Billum: That's exactly the problem. We'd need a shoehorn to get into that court.

Fleesum: Well, how about the personal injury market? It's not much of a leap from businesses damaged by Y2K glitches to backs damaged by minor falls and accidents.

Skrewum: Puh-lease! You want to convert the firm that successfully sued the entire country of Colombia when a woman burned her lap on hot coffee to a bunch of ambulance chasers?

Billum: Well, there is the matter of our 120 Y2K-ready lawyers, all dressed up for a big bash with nowhere to go.

Skrewum: What's that? Sirens? (Running to the window.) Holy mackerel! That's a 12-car pileup right on 59th Street. There's got to be a dozen people hurt! Guys, look at this! Guys . . . guys? Hey, where'd everyone go? ▶

LENNY LIEBMANN

Who needs IT? No one more than IT managers

WE HAVE all seen examples of "shoemaker's children" syndrome — child psychologists whose kids are hopelessly maladjusted, contractors whose own homes are in constant disrepair. And then there's IT.

Is any department more desperately in need of ERP-style, information-at-your-fingertips tools than IT? Is any department less adept at using databases and decision-support systems to make smart business moves? Does any executive have poorer access to numbers that indicate how his team is doing than the CIO?

LENNY LIEBMANN is a partner at IP&D, a Highlands, N.J.-based IT consulting firm. Contact him at lenny100@...

I talk to lots of IT executives. They're some of the brightest, most motivated people I know. They're able to understand and articulate complex business technology issues with astonishing clarity. And they're really fun to work with.

Amazingly, however, they often can't answer simple questions like "Which boxes suck up more systems administration person-hours, Wintel or Unix?" or "What does it cost you to support a mobile user?" or, more to the point, "What was your total ROI for bringing Java development into the business?"

On one level, that makes their management skills seem even more impressive. Because they lack such metrics, they've got to be tremendously intuitive thinkers.

On the other hand, there's something bizarre and dangerous about this situation. I'm not saying IT managers need to answer my questions with the click of a mouse — although that's not an unreasonable expectation. But, in many cases, they don't have the necessary information at all.

The consequences of this situation are far-reaching. For example, in the midst of all the year 2000 work, companies are spending lots of money to upgrade machines that are at the end of their leases. Those machines will be retired before December and don't need to be fixed! In fact, because of the scandalous practices of leasing companies, many businesses will be paying for machines month after month — even after their leases have expired.

But the impact of IT's lack of ERP-style tools goes beyond asset management and cost-efficiency. It also strikes at the heart of IT's effectiveness. For example, IT is playing an increasingly central role in the launch and acquisition of new business units.

An IT manager can't effectively devise a plan to get a new unit up and running without knowing the following: 1) how existing projects and functions are currently consuming finite IT staff resources; 2) what staff resources are needed to meet time-to-market objectives for the new unit; and 3) how existing projects and functions will be affected by any proposed diversion of resources. Without such data, IT simply can't align itself with the business.

Flying by the seat of one's pants was somewhat tolerable when IT was just a back-office infrastructure function. But now that IT has become a critical component of every business process — and a growing percentage of the corporate budget — IT executives simply *must* have better access to higher-quality information about people, assets and financials.

Unfortunately, we're at a chicken-and-egg stage in this market. Certain asset management vendors, such as Peregrine Systems and NetBalance, are starting to deliver the kind of resource data aggregation-and-analysis tools that IT needs. But they have to tread carefully because CIOs haven't defined the requirements of an ERP-for-IT application. And CIOs haven't defined those requirements because they haven't seen anything that they can use as a point of reference yet.

But someone needs to do something fast. IT has become too strategic and too expensive not to have the benefit of solid decision-support tools — tools that track people and dollars in addition to servers and switches. Without such tools, IT will continue to lack the accountability and credibility it so sorely needs.

And besides, who wants to walk around with holes in their shoes? ▶

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BUSINESS

AVON CIO CALLS FOR IT REVAMP

Avon has grown into a $5.3 billion empire, with 2.8 million sales reps in 135 countries. But it has 700-plus disparate systems and needs a massive IT overhaul to support its new sales channels and changing market dynamics. CEO Charles Perrin pledges his support — and new CIO Sateesh Lele is also ready. ▶ 38

SCHNEIDER'S PORTAL PAINS

You can't please everyone all the time, as Schneider Automation learned when it built a single interface on to its myriad systems for employees in 130 countries. Some said the corporate portal, designed for slow modems, was too plain; other workers still couldn't access needed documents. Version 2.0 is due soon. ▶ 40

Y2K PLANNING HITS TRAVEL

When you go on your first business trip next year, will everything go smoothly? Will your plane, hotel or car reservation be missing? Will your credit card work? Corporate travel managers are banding together to separate Y2K fact from fiction. ▶ 42

MORE CHANGES IN THE E-WORLD

Business model is displacing *strategy* as the core term for viewing the new world of e-commerce. That's why healing broken business models is now a core mission for corporate IT, writes columnist Peter G. W. Keen. ▶ 44
E-commerce also turns "strategic management" on its head because there's no time for mission statements and other traditional processes. See QuickStudy. ▶ 50

JOB BLUNDERS OVERCOME

It might be turning down an exciting job because it doesn't pay enough, joining a dying company or failing to properly assess the market for your skills. Three IT pros who made bad career moves talk about their regrets — and how they still managed to come out on top. ▶ 46

BANK RENTS E-BUSINESS APPS

Star One Federal Credit Union has been providing Web-based account access and other home banking services for its customers since 1996 — by renting the hardware, software and services that make it all possible. ▶ 38

PROJECT MANAGERS

If you want to move up in the IT ranks, think about project management, which hones people, organization and management skills. ▶ 53

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A NEW VIEW FROM HARVARD

WHAT? A Harvard Business School dean who can talk about Linux? Get to know Kim B. Clark, and that won't sound so surprising. Clark says he sees a world coming in which CIOs become chief project officers and IT leaders redesign companies. How else will companies cope with the incredible complexity and increased decentralization?

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Avon Calls for Revamp Of Its Worldwide IT

New CIO Sateesh Lele to standardize hardware using Unix, Oracle databases

BY STACY COLLETT

AVON PRODUCTS Inc.'s new CIO, Sateesh Lele, knew he had a Herculean problem on his hands after finishing a 10-week, 10-country tour of the beauty products company's top revenue-producing regions.

Some of those operations — in South America, Asia, the U.K. and Puerto Rico — are riddled with myriad, outdated hardware platforms; dozens of incompatible, homegrown order processing and financial software systems; and hundreds of information technology staffers with 15 to 20 years of mainframe experience.

Worldwide, "we wound up with 700 [disparate] local systems, despite the fact we were spending a significant amount on IT," said Charles Perrin, CEO of Avon.

Even in the U.S., the order system the New York-based company uses is 20 years old. Most of Avon's field representatives still write orders on carbon paper forms and mail them to headquarters, where they have to be manually keyed in to a mainframe computer. Yet they still manage to send out 4 million orders every two weeks.

"It's kind of like revisiting the mid-'80s — like the world stood still," said Lele, former CIO at General Motors Corp. in Europe. He joined Avon April 1 to spearhead the overhaul, after helping GM with its re-engineering projects. Lele also led similar projects at Network Equipment Technologies Inc. and Telogy Inc., both in California.

AVON CIO SATEESH LELE wants a standard system for financials, supply chain and human resources

The good news is the company has still managed to grow into a $5.3 billion empire with 2.8 million sales representatives in 135 countries. Earnings rose 40% in the first quarter this year from the same quarter a year ago. But 1998 revenue was up just 3% over 1997.

Industry dynamics are changing, and e-commerce has become the focal point. Though Avon's field representatives continue to be the company's strongest sales link, the increase in two-income families means that nobody's home when Avon pays a call.

"The direct sales industry in general is having a hard time" reaching its audience, said Brian Hume, president of retail consulting firm Martec International Inc. in Atlanta. So Avon has created additional channels, including more catalog offerings, a Web site — which Lele acknowledged is in a nascent stage — and 40 new retail stores nationwide. Lele said he wants to link those entities through common systems sharing information over the Internet. So he has outlined an aggressive plan for a massive IT overhaul.

Lele said he plans to standardize all hardware on Unix platforms and Oracle Corp. relational databases; choose a common enterprisewide system for financials, supply-chain and human resources; consolidate 35 data centers into about 10; and replace or retrain Avon's 1,300 IT employees on client/server systems, e-commerce and supply-chain technologies.

He also plans to develop a worldwide intranet for sharing information among countries and an extranet to tie in with suppliers, allow sales representatives to place orders quickly and directly, check product availability in real time and track order delivery.

Lele said he plans to finance the new IT initiatives with the money saved by cutting inefficiencies like manual order entry and maintenance on too many systems. The budget should be clearer in the first quarter of next year, he said, and the effort should take three to five years.

Perrin said the overhaul is critical to Avon's competitiveness. "We're not an easy company to do business with. We're still a paper-based company, we're not flexible enough, we don't offer the representative as much information as she should have in running her business. We see the role of technology" in changing that, he said.

Some industry observers said Avon is making a timely move. "Now that Avon has got its [channels] in place, now's the time to improve the behind-the-scenes function," said William Steele, an analyst at Banc of America Securities LLC in San Francisco.

Avon's Plan

Avon began a re-engineering program last year to transform its business with new channels, new products and new technology. It also plans to save $400 million annually through next year by cutting inefficiencies. How will it do that?

Step 1: CIO Sateesh Lele said the process started with a "120% commitment" by Avon executives and solid growth strategies.

The team outlined eight strategies, including "revolutionizing the field reps' sales experience" through Internet access, reaching new retail customers and building companywide relationships through technology.

Step 2: Avon has been working with consulting firm PricewaterhouseCoopers to develop a re-engineering plan. But Lele said he'll work with consultants in e-commerce and supply-chain management to "radically rethink our processes." A strategy should emerge in the next three months.

Step 3: By next March, Lele said he will have decided which hardware, middleware, enterprise resource planning packages, supply-chain, ordering and customer management software Avon will use.

Step 4: Avon will spend the next four years implementing systems, revamping its Web site (*www.avon.com*) and retraining.

– Stacy Collett

Renting Online Services Easier for Bank

Few IT worries puts focus on finances

BY JAIKUMAR VIJAYAN

When Star One Federal Credit Union decided to offer customers online banking services in mid-1996, it didn't want the hassle of setting up and managing the services in-house.

The Sunnyvale, Calif.-based bank, which has $1.7 billion in assets, instead decided to rent the required applications, network bandwidth and services. Three years later, the biggest benefit is that "it has allowed us to focus on our business of providing financial services without having to wade through technology issues," said Sam Tuohey, Star One's manager of remote services.

The company was able to develop a major loan processing application without worrying about the information technology issues involved in deploying it, Tuohey said.

However, renting applications from an Internet hosting service has so far not proved any cheaper than hosting it in-house, Tuohey said. Star One pays Digital Insight in Calabasas, Calif., subscription charges of up to $200,000 per year based on the number of customers that use its Web services. Tuohey estimated it would have cost the bank $230,000 to build the application in-house, not including extra staffing costs.

Only 8,000 Star One customers, or about 15%, use the Web services now. "So cost-wise, it's been a wash for us, Tuohey said. "But if the number of users was around 40,000, [renting] would be so expensive that I could probably justify bringing it in-house."

Star One is an example of the growing number of small to midsize businesses that are expected to rent applications and services from Internet application hosting services in the next few years.

"Application hosting provides an opportunity for companies to lower up-front costs and eliminate the need to have experts in-house," said Thomas Kucharvy, an analyst at Summit Strategies Inc. in Boston.

AT A GLANCE

Hosting Apps For Banks

Some of the online banking services provided by application hosting services:

- Basic Web site hosting and management
- Home banking
- Features that let consumers apply for and pay for loans and mortgages
- Tax payment services

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Financial Reform Bill Raises Privacy Worries

Congress considers what data can be shared

BY PATRICK THIBODEAU
WASHINGTON

CONGRESSIONAL actions to end Depression-era prohibitions against the merger of banks, insurance companies and securities firms will also give information technology managers the ability to develop systems that can freely share customer information among those merged entities.

But the data-sharing freedoms of companies that deal in information that most consumers consider very private were the most controversial aspect nf the financial services reform legislation, approved in the U.S. House earlier this month.

Industry proponents say a key goal of the legislation, which was passed earlier by the Senate, is to enable banks, securities and insurance firms to develop cross-marketing programs for e-commerce and other marketing efforts.

The affiliated companies will be able to use everything from phone numbers to credit-card records to develop detailed customer profiles. "If you are unable tn share basic customer information, you are really shutting down the need for the bill," said Dan Zielinski, a spokesman at the American Insurance Association in Washington.

But privacy advocates warn of abuses, such as banks seeking health information from an affiliate insurer before issuing a loan tn a customer.

"This [bill] is as harmful to consumer privacy as anything they can think of," said Lee Wind, a founder of the Coalition to Amend the Financial Information Privacy Act in Mamaroneck, N.Y.

The House provision does give consumers the ability to prevent financial services from selling personal data to third-party firms. Privacy groups would like that same provision for affiliated companies.

House Democrats, led by Reps. Edward Markey (D-Mass.) and John Dingell (D-Mich.), bad sought tnugber privacy restrictions but failed in a 227-203 vote July 1.

If restrictions are placed nn the flow of information, IT managers will have to implement systems that make sure customer wishes are protected and develop barriers tn block access, said Bill Bradway, an analyst at Meridien Research Inc. in Newtnn, Mass. "But to me, it's something that can be managed and overcome. Well-run [IT] shops will know how to do it," he said.

JUST THE FACTS

Reform Rundown

What happened: The House joined the Senate in approving the Financial Services Modernization bill, which allows banks, insurance and securities firms to merge.

Main sticking point: Privacy groups oppose a provision in the House bill allowing affiliates to share customer information.

What's next: The House and Senate will meet in conference to resolve differences.

130-Country Manufacturer Builds Own Portal

Yet learns that one 'size' doesn't fit all

BY DOMINIQUE DECKMYN

Faced with a "knowledge gap" between its North Andover, Mass., headquarters and its sprawling network of operations and distributors in 130 countries, electric equipment manufacturer Schneider Automation needed a new system.

It wanted one that would give employees and distributora easy access to everything they needed to sell, market and support the company's products.

But building an enterprise portal for employees and partners — most of whom don't speak English as their first language and many of whom were accessing the network from 9.6K bit/sec. dial-up connections — posed some interesting challenges, said John McElfresh, director of electronic-business at Schneider and one of the fathers of the project.

And Schneider didn't get everything right the first time. User complaints at both ends of the spectrum — that the simple interface didn't have enough to it but that large documents couldn't be downloaded effectively — will be addressed in a major redesign due in the next 60 days.

Schneider's goal was to connect various sources, including technical and marketing documents, and enterprise resource planning data housed in SAP AG's R/3 in Germany, France and the U.S. Schneider also wanted to link tbe portal tn the company's help desk software from Santa Clara, Calif.-based Vantive Corp.

Schneider hired a consultant to create the portal. First it chose its server — Lotus Domino — partly because tbe company already used Notes but also because of Notes' good workflow capabilities, McElfresh said.

The company decided to have employees access the portal by browser rather than an e-mail client, so users in remote locations didn't need to get Notes clients if they didn't have them. For the search engine, the company chose advanced search software from PC DOCS Group International Inc.'s PC DOCS/Fulcrum unit.

Next it focused on the global user aspect. The company used automatic translation software — Lotus Domino Global Workbench — to automatically translate design elements such as links and field labels. That allowed it to operate a French version of tbe portal, and rolling out planned versions in Spanish and other languages will require little additional effort, said Mark Elder, a vice president at Transaction Information Systems Inc., a consultancy in New York that worked nn the project.

Still, that didn't satisfy everyone. Because of bandwidth problems many users face overseas, Schneider had opted for a "spartan" interface, but users complained they wanted more information on every page and more navigation controls, McElfresh said.

On the other hand, users had trouble downloading some nf the larger documents on the site. In response, Schneider came up with a "shopping cart" device by which users indicate which documents they want to receive. Those are automatically burnt into a CD-ROM, which is mailed to them.

The site, which went live in Marcb last year, will have cost about $2.5 million by the end of this year, excluding the requirements process. Now used by 3,000 employees, it will serve 10,000 when the rollout is complete.

Schneider has also decided to replace its public Web site, which was designed in Microsoft Corp.'s FrontPage and runs on Internet Information Server, with a site built in Lotus Domino that shares the same Notes database with the portal site.

That, according to David Ehrman, IS manager for e-business, will save the company the cost of keeping information on both sites up to date.

PROBLEM: Low bandwidth in some countries
SOLUTION: Add abstracts of documents, send users a custom CD-ROM with the documents they select

PROBLEM: Multiple languages
SOLUTION: Use software that can translate a site almost automatically

PROBLEM: Differing levels of Net savviness
SOLUTION: Use familiar elements, reduce the number of categories or keywords, add more information to a single screen, reduce navigation

SNAPSHOT

World Wide Wait

The average time, in seconds, to download a home page from one of 40 business-related Web sites during business hours for the week of June 21:

Top 5 Best-Performing Web sites	
Yahoo	2.56
Apple	3.13
Lycos	3.44
AltaVista	3.53
Federal Express	3.64

Best Areas to Web Surf	
Atlanta	4.06
Pittsburgh	4.57
Phoenix	4.60

Worst Areas to Web Surf	
San Diego	16.56
Tampa, Fla.	14.23
New York	12.75

SOURCE: KEYNOTE SYSTEMS INC. (WWW.KEYNOTE.COM), SAN MATEO, CALIF.

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COMPUTERWORLD
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BRIEFS

Mellon Bank: We're Ready

Mellon Bank Corp. said it has met its June 30 year 2000 deadline and is ready for the date change. The bank said all of its critical and other important information technology and non-IT systems have have successfully tested. Nonetheless, some of its offices will be open on Jan. 1 and Jan. 2 to reassure customers that their funds are intact.

Power Company Nears Compliance

American Electric Power Co. in Columbus, Ohio, said all but two of its mission-critical and high-priority systems are now Y2K-ready. Those yet to be completed include a gas measurement system at Louisiana Intrastate Gas and a meteorological reporting system at the Cook Nuclear Plant in Bridgman, Mich.

No Y2K Holiday In Philippines

Some countries are considering declaring extended public New Year's holidays to avoid bank runs and other year 2000-related disruptions – but the Philippines isn't among them. The country's Presidential Commission on Year 2000 Compliance has ruled out an extended public holiday, and in fact, will ask banks to open Jan. 1, which is normally a holiday and which will fall on a Saturday.

Businesses on the Margin Brace for Cash-Flow Woes

Some hospitals seek automatic payments

BY THOMAS HOFFMAN

FOR COMPANIES with razor-thin profit margins such as hospitals and supermarkets, the year 2000 computer bug is especially troubling: They worry that a Y2K glitch could cause a cash-flow or credit disruption that might put them out of business.

PATRICK CARNEY: Additional bank credit a Y2K safeguard

Cash flow is a big issue for hospitals, which have been forced by state payors and health maintenance organizations to provide the same services for smaller reimbursements.

No Money

Hospitals on the brink of bankruptcy "are not putting a lot of effort into Y2K" simply because they can't afford to, said Carl Greiner, an analyst at Meta Group Inc. in Stamford, Conn. But HMOs are pushing those financially troubled facilities to address their cash-flow problems and other year 2000-related issues, he said.

Healthier hospitals are taking steps to make sure payments continue to come in, even if there are Y2K-related disruptions in the usual reimbursement process. Miami-based Jackson Memorial Hospital, for example, negotiated a deal with Florida's Medicaid and Medicare agencies under which the state will send the hospital a monthly payment in January 2000 based on its January 1999 figures.

"That's a powerful agreement," said Raymond Beerman, director of MIS at the 1,645-bed facility. "We can go back *X* number of months to see what kinds of [payment] volumes we've been averaging, so we don't run into a cash-flow problem."

Similarly, the Massachusetts Hospital Association is pushing a bill through the state legislature that would require HMOs and health care insurers to maintain payments based on the average monthly reimbursements in 1999.

> [We can check average payment volumes], so we don't run into a cash-flow problem."
>
> RAYMOND BEERMAN, JACKSON MEMORIAL

Staten Island University Hospital in New York, meanwhile, is planning to make sure it has extra lines of credit available with its banks, in case its payors run into Y2K-related snags early next year, said CIO Patrick Carney.

For most supermarkets, a safe bet would be to shift from 30-day payment cycles with suppliers to 60-, 90- or even 120-day payment cycles next year because "there will be screw-ups," predicted Stephanie Moore, an analyst at Giga Information Group in Cambridge, Mass.

Several supermarket chains declined to discuss their contingency plans for Y2K financial problems. But the Grocery Manufacturers of America and the Food Marketing Institute, two Washington-based trade associations, said they are working together to create a set of ground rules for resolving any year 2000-related payment disputes in the food supply chain.

SNAPSHOT

Competitor Comparison

Here's what the year 2000 problem is costing two of the nation's top car-rental companies:

	[illegible]	[illegible]
Fortune 500 rank	$29	996
Costs as of March 31	$3.2M*	$13.9M
Estimate of total costs	$6.8M*	$22.3M
Notes:	Expects to complete all major modification efforts by middle of year, with some projects extending into late 1999.	Expects mission-critical systems will be compliant this summer.

* 1998 and 1999 only

SOURCE: COMPANIES' MAY 10-Q STATEMENT FILED WITH THE U.S. SECURITIES AND EXCHANGE COMMISSION

Y2K Places Corporate Travel Plans in Limbo

Companies form contingency group

BY STACY COLLETT

Although Dec. 31 may not be a booming business-travel day for Black & Decker Corp. in Towson, Md., come January, a series of worldwide sales meetings will begin in which 500 to 600 employees descend on hotel properties for strategy meetings.

Which airlines, cities, hotels and credit-card companies can the company trust to be year 2000-ready so that those meetings won't turn into disasters?

Black & Decker corporate travel director Peter Buchheit doesn't have that answer yet. Unsettling reports about Y2K compliance problems at airlines, hotels and even banks have put the company's travel plans in limbo.

"If a hotel finds out there's a problem Jan. 1, 2 or 3, it may not be fixed until February or March," Buchheit said.

So Buchheit has joined 49 other companies sharing their travel industry knowledge and developing contingency plans for traveling in the new year. The Y2K Working Group was formed by the Business Travel Coalition (BTC), a corporate travel association based in Lafayette Hill, Pa. DaimlerChrysler AG, General Motors Corp. and Procter & Gamble Co. are members.

PETER BUCHHEIT: Fixes may take months

"If a CEO reads an alarming Y2K story [about travel] . . . the travel manager can lay out alternatives and also help the CEO separate fact from fiction," said Kevin Mitchell, chairman of the BTC.

Michael Craighead, travel operations manager at DaimlerChrysler, said safety is a top concern for his 20,000 traveling employees. But he also wondered, "When you get to a hotel, is the electronic card key going to work? What do I do about currency? Credit cards may not work. The list runs on and on."

The group has outlined top travel concerns such as safety, food and shelter; where to go for emergency aid in foreign countries; how to communicate with the office and family in an emergency; and how to make cash advances and travelers checks more available.

The group will share its ideas at an Aug. 24 teleconference and on its Web site (*www.btc-online.com*). Based on the findings, companies might restrict international travel for a time, temporarily stop electronic-ticketing, offer radio telephones in certain countries or develop an emergency expatriate re-entry plan, Mitchell said.

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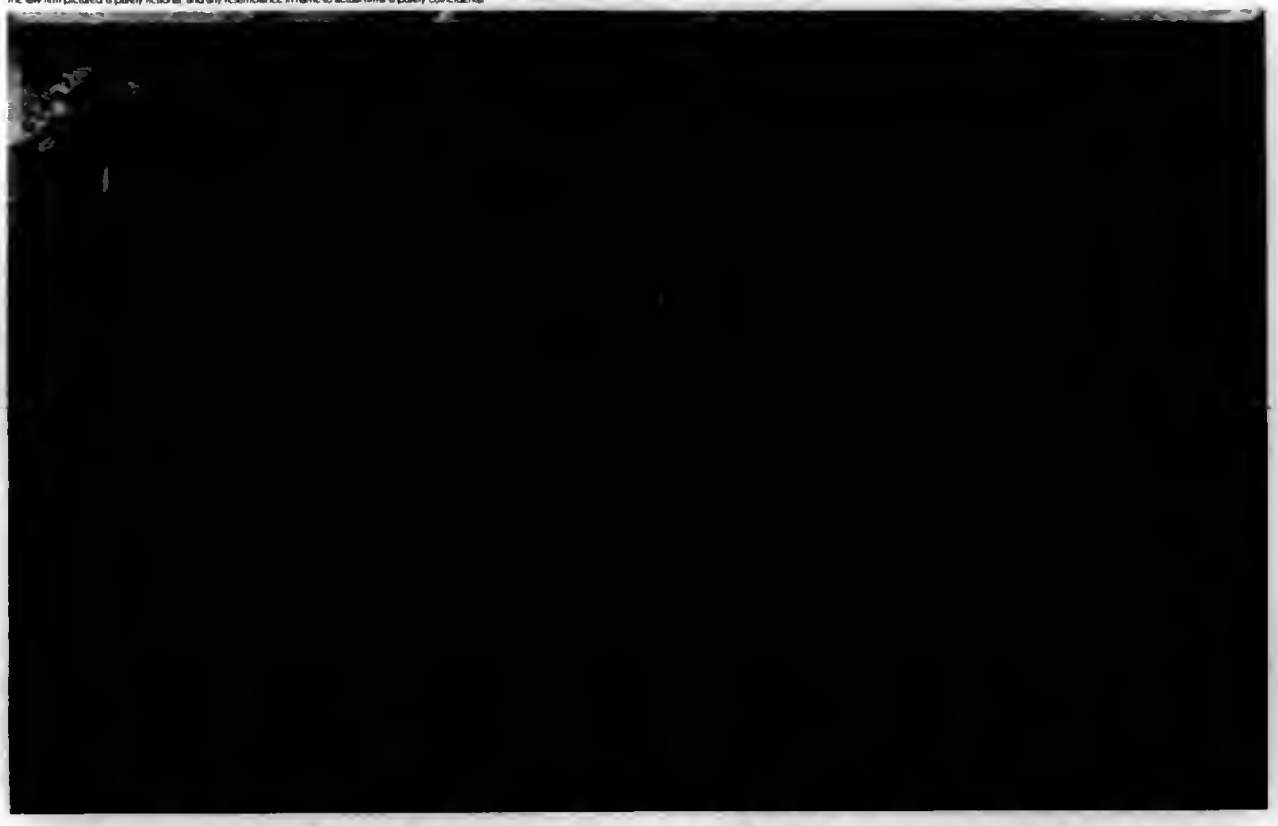

In court, their hardest questions will be about Y2K verification.

If your Y2K remediation is complete, congratulations are in order. But there are still questions, especially in case of a lawsuit: has the work been independently verified? Can you prove due diligence? Have you made contingency plans for Y2K emergencies? Have you got business continuity plans in place? ADPAC has the tools and the training to make the answer to all those questions "yes".

ADPAC SVReview is the automated COBOL tool that verifies Y2K changes, regardless of the methodology or vendor used. It provides the independent reports and audit trails that will support due diligence – critical information that companies will need in defending themselves against potential litigation. SVReview also helps you guard against recorruption of remediated code, whether it occurs as a result of routine maintenance, reengineering, or the introduction of new code that's not Y2K compliant.

ADPAC SWAT (System Wide Analysis Team) Training is an intensive, 5 day course that prepares your rapid response team to deal with Y2K emergencies that can cause crashes, inaccurate data, business slowdowns, and more.

You'll find ADPAC tools on IBM and compatible mainframes in many of the world's largest corporations, utilities, university computer systems, and critical government mainframes. Find out more from ADPAC, or from one of our Consulting Partners, including Platinum technology, Renaissance Worldwide, Intertec Communications, The Trotter Group, TranSys, and MTS People's Source. SVReview is one of the ADPAC SystemVision family of tools.

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NEW REPORTS

Training Expenses

A report, based in part on new research from International Data Corp. (www.idc.com) in Framingham, Mass., explores trends in the information technology education and training market from the purchaser's point of view. Titled "Survey of Corporate Education Buyers' Needs and Requirements," the report predicts that the global IT training market will grow from $16.5 billion last year to $27.8 billion in 2003.

The report costs $2,500.

Travel Site Primer

A new report from Forrester Research Inc. (www.forrester.com) in Cambridge, Mass., compares 34 of the top travel sites, such as Yahoo.com, Travelocity.com and Expedia.com, and predicts the long-term winners. The report, "Web Travel Winners," projects that today's $3.1 billion Web travel industry will grow to $29 billion by 2003. The report is available by subscription.

CRM Vendor Hype

Software now available for customer relationship management usually does one thing very well – but won't serve companies that want to use it in more than one department, according to a new report, "Ovum Evaluates: CRM in the Front Office," from research firm Ovum (www.ovum.com) in London. The report, which costs $2,220, warns companies not to believe vendor claims that their packages offer complete solutions.

BRIEFS

Yahoo Expands Marketing Alliance

Procter & Gamble Co. and Yahoo Inc., trying to reach new customers for P&G products such as Pringles, Pepto-Bismol and Pampers, have expanded their marketing alliance. Previously, P&G ran standard advertisements on the Yahoo Web site; now, there are more cross-promotions.

For example, Yahoo gamers playing online games such as checkers and chess can now win "Pringles Points."

Most-Popular Search Engines

Yahoo	32.9%
AltaVista	8.6%
Netscape	8.6%
InfoSeek	8.0%
Excite	8.6%
America Online	7.7%
HotBot	3.8%
Lycos	4.0%
Metacrawler	3.0%
Dogpile	3.5%

[illegible]

Around the Globe

*Latest cost estimates for year 2000 work**

China	$[illegible]	Indonesia	$43.4B
U.S.	$[illegible]	Italy	$36.9B
Japan	$[illegible]	France	$35.7B
India	$[illegible]	Mexico	$28.7B
Germany	$[illegible]	Russia	$26.7B
Brazil	$[illegible]		

*Doesn't include legal or insurance costs.

PETER G. W. KEEN

Business re-model

YEARS AGO, I cracked my ribs. Nothing has ever hurt so much for so long. I could still sort of function, but I couldn't think much about anything else until the fracture was fixed. Similarly, e-commerce has a lot of previously healthy companies walking around with fractured business models. They are getting by, but, boy, are they hurting. And until they can fix their business models, they can't move on to the other important stuff, like vision, strategy or planning.

Business model is largely displacing *strategy* as the core term for viewing the new world of commerce today. There's good reason: Strategy largely works within the givens of business — industry, channels, price structures — but there aren't any givens now. Is our basic business model sound, or will we have to change, adapt or even abandon it? Strategy rests on answering this, not the other way around.

That's what IT is now about: business models — the basic frameworks into which visions, strategies, plans and programs fit. E-commerce has shown how fragile successful business models can suddenly turn out to be.

As always, Amazon.com is the fable for our time in that regard. It has only around 1% of the total book market, yet that tiny penetration has fractured the business model of two fine companies — Barnes & Noble and Borders — which can't be faulted in their operations, customer service or performance. Charles Schwab did the same to Merrill Lynch.

Isn't it extraordinary that a Merrill Lynch should be pushed on the strategic defensive in one year while remaining very good at what it does? And that Amazon's 1% market share has changed the business rules of an entire industry?

A recent comment directed to me by the CEO of a megasize financial institution captured why *business model* is now part of the new IT vocabulary: "I don't know what the bank should be five years from now." That's the dilemma for the CEO of a company like Barnes & Noble.

The role of IT is to enable the company to best benefit from technology as a business resource. When your business model is healthy, Web commerce is an opportunity to improve your firm's business performance. When it's fractured, the leadership challenge is one of announcing a new business identity: "What should the company be in five years?"

Is our basic business model sound?

IT must talk to that concern — business model, not technology strategy. Dell Computer is the best example of the negative working-capital business model — that's the language of finance. Amazon is the model of massive expenditures on customer acquisition recovered through aggressive moves to generate repeat business that has an 80% incremental margin — the language there is relationship marketing. The Schwab model is channel harmonization.

GE's Trading Partner Network, Chemdex (an online marketplace for life sciences products), eBay and most Web portals are market brokers in a fragmented customer-supplier relationship chain — the language of distribution and wholesaling. To address the business-model question, CIOs and their key staff must do the following:

- Identify from leaders in the new electronic economy the business model "templates" — for example, the channel harmonization, customer relationship, supply chain and integration — most appropriate to the firm.
- Look at where, why and how any of these fracture the company's own model.
- Interpret all this in business and economic terms to senior managers.
- Identify the business and technology path that may best reposition the firm. With that set of briefings, it's then up to the business leaders to lead.

The role of IT is shifting fast from technology support for the business to a business-centered dialogue. IT professionals must spend time becoming experts on commerce and be able to talk about IT in the languages of finance, marketing, logistics and distribution.

How's your company's business model? Fractured ribs really, really hurt. Can you, as an IT professional, help heal them?

Keen is chairman of Keen Group's three business units: Innovations, Education and Knowledge. Contact him at peter@peterkeen.com.

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CAREER MISTAKES seem to come in two varieties: short-term, correctable errors and long-term, oear-fatal blunders. But it appears that eveo those career crashes have some redeeming value, which begins to surface only years after the actual eveot. Looking back oo what they might coocede were really stupid mistakes, many seasooed informatioo technology professionals say later that they wouldn't change a thing they did — or didn't — do early in their careers. Some may even become more than a little philosophical about their fate.

Peter DuPre

CIO at W. B. Mason Co., Brockton, Mass.

THE BAD MOVE: A former professional musician, composer and self-taught computer expert, DuPre passed up what he calls an "extraordinary opportunity" to develop oew systems for A&M Records back in the late 1980s because the job would have paid less than he was earning as an independent Unix consultant.

"The job was to help automate the audio and video sides of the business, and it was so incredibly interesting," he recalls. "But I was just scraping by, and the pay was a good $20,000 less than what I was making."

So DuPre declined the offer — and has regretted it ever since.

"It was a financial decision, and financial decisions can he very, very wrong," he says. Sometimes, DuPre says. be wonders wistfully about how things might have turned out had he takeo the job.

"I look back and see where it could have led, and it would have beeo incredibly exciting," he says.

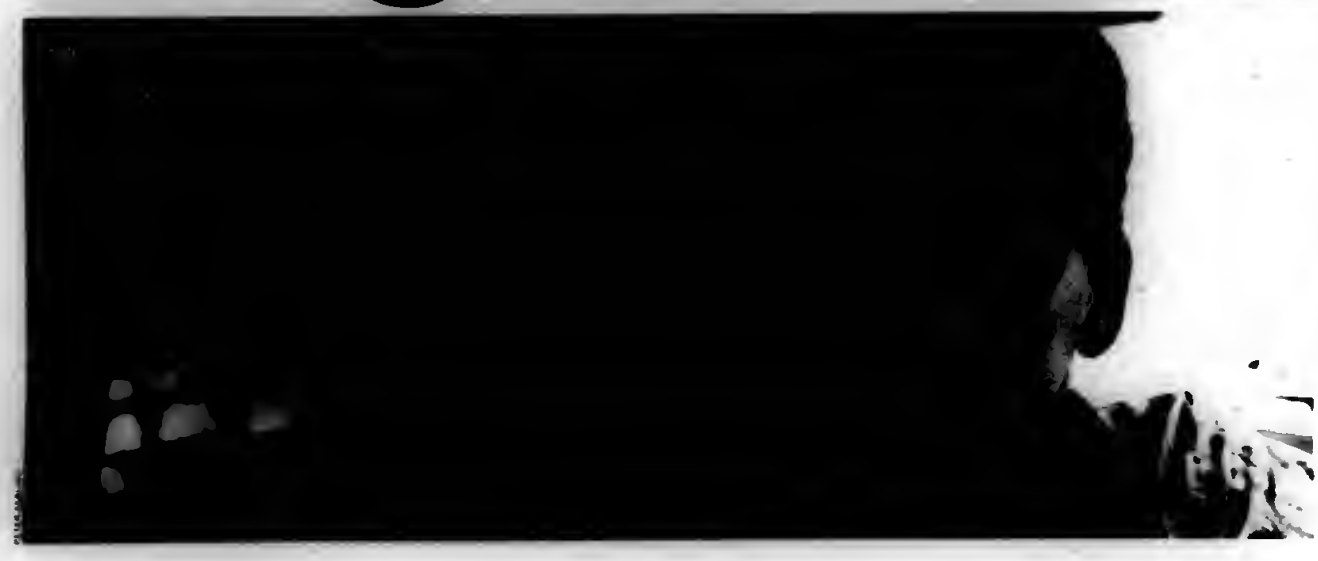
LESSON LEARNED: "You have to have faith that if you can have a major impact oo a company, you'll be rewarded," he says. "Or, if you're oot, that some other company is going to come along and ask you to come and do the same thing for them."

In DuPre's case, that company was office-supply chain W. B. Mason, whose CEO, Leo Meehan, lives oext door to DuPre and would listen to his stories about what he was doing as a consultant. The two would sit on Meehan's back porch and "plot the takeover of the office-supply world" over a couple of beers, DuPre says.

SILVER LINING: "I had beeo pretty much self-employed until I took this job at W. B. Mason. Now I'm 39 years old and CIO of a fantastic company, and I have a boss who's one of my best friends," he says.

ADVICE TO OTHERS: Doo't make job choices based oo salary. Instead, "find some place you like to he and then try to knock the ball out of the park from there," DuPre says.

Magnificent



BLUNDERS

Bad job moves can sometimes lead to great career results. Consider the past lives of these three executives, whose mistakes made them what they are today. By Julia King

Ken Ficara

Director of news technologies at The Wall Street Journal Interactive Edition, *New York*

THE BAD MOVE: The year was 1989, and Ken Ficara, a New York native and staff writer for *The Centre Times* in State College, Pa., says he "had run out of patience with small towns." So after two years, he quit his reporting job at the 25,000-circulation newspaper and headed back to the Big Apple in search of a more exciting position with a bigger publication.

He arrived back in the city to find New York's *Daily News* was shutting down, flooding the job market with seasoned reporters who had far more experience than Ficara. Reluctantly, he settled for a job with a Brooklyn weekly, where he lasted five months. He then moved on to a writing job in the marketing department at Dow Jones & Co. in Princeton, N.J.

In the meantime, Ficara says he had burned his bridges in terms of advancing through the traditional newspaper ranks. Had he stayed at *The Centre Times*, he says, "My path would have been to move up to the next level of Knight-Ridder [Inc.] papers, which would have been to Charlotte, [N.C.,] Biloxi, [Miss.,] or Akron, [Ohio]."

LESSON LEARNED: "Pay attention to what's going on around you" before making a major career move, Ficara says. For example, had he been aware of the flood of more experienced journalists looking for work in New York at the time, he would have more accurately assessed the unlikelihood of realizing his own job goals there.

SILVER LINING: Ficara's marketing job involved learning and writing about all of Dow Jones' electronic products. It also included accompanying salespeople when they called on potential subscribers, giving Ficara first-hand access to the company's customers and the *The Wall Street Journal*'s future Web-based readers.

A year into Ficara's marketing job, Dow Jones formed a small group to build graphical user interfaces for its online financial and business data. Ficara — who had studied some computer science in college — knew immediately what he wanted to do next.

"I started to realize that I was on the ground floor of something very exciting, and that there was a lot more to the company than the marketing department," Ficara recalls. He returned to college at night to complete his computer science studies.

He also became a member of the team that was developing what would later become the Web-based version of the nation's No. 1 business newspaper.

In 1995, Ficara, now 34, moved on to become webmaster at *The Wall Street Journal Interactive Edition*. Today, he oversees the development of all technologies used by its researchers, writers, editors and readers.

ADVICE TO OTHERS: Pay attention to everything that goes on around you — even when you're not in the job you really want. "Even in the marketing department, I started to realize that with all of the things Dow Jones was doing with electronic information and with my dual background, the world was going to turn upside down one way or another," he says.

Joe Greulich

IT director at Roberts Express Inc., Akron, Ohio

THE BAD MOVE: Greulich took a job with a company that he didn't realize was failing financially. It was the early 1980s when Greulich, then a computer programmer at a bank, says he looked around and came to the conclusion that the people who were moving up the ladder into management positions "always seemed to have a sales background."

So he set out to get the same experience, taking a sales job with the U.S. arm of Nixdorf Computers, then a privately-held German company that later became part of Siemens Corp. In Greulich's first week on the job, Nixdorf laid off 10% of its staff in an effort to stem financial problems of which Greulich had been unaware.

"I had looked at the financial information they had given me [prior to taking the job], and I was thinking they were a $1 billion company in Germany," he recalls. "I didn't understand the details whatsoever — because here in the U.S., they were a $250 million entity that was losing money."

LESSONS LEARNED: After calling his old boss to see if the bank would take him back (it didn't), Greulich stuck it out at Nixdorf, learning about what he calls "the art and science of field operations." That includes knowing whom to call at corporate headquarters to get the information or support he needed. "You have to be very tenacious," he says.

He says he also learned about "real camaraderie and teamwork" from all the Nixdorf salespeople, engineers and repair technicians who depend on one another as part of a field sales force.

Greulich moved on to another sales job at Wang Laboratories Inc. One of his clients there was his current employer, Roberts Express Inc., a division of $15 billion FDX Corp., the parent company of Federal Express. Like Nixdorf, Wang was also sinking financially despite a top-notch sales force and excellent technology, Greulich says.

SILVER LINING: Greulich's experience on the Roberts Express account helped him land his current post as the express shipping company's IT director. He has been at Roberts for 11 years, where he says he has relied extensively on his sales experience.

"I'm the IT director, but I'm [also] a salesman," Greulich says. "I have to sell new changes every day, all of the time. If you go to do a project to improve customer service, you have to sell it to management and to the people you're doing the work for."

ADVICE TO OTHERS: Remember that with anything you do in IT, you're selling, he says. Don't be shy about showcasing the benefits of what you have to offer. "When you see how marketing works, you realize you've got to market your department. Publish what you're doing and who you're doing it for," he says. "We actually try to take lessons from sales and make our department work like a company [with something to sell] within a company."

A New View From Harvard

***Kim B. Clark**, dean of Harvard Business School, is known for training CEOs — but has his eyes on CIOs and the information technology revolution. In an interview with* Computerworld's **Gary H. Anthes**, *Clark says IT is now so central to everything a company does that CIOs should morph into chief project officers with responsibility even for non-IT projects.*

Clark's research has focused on "modularity" in information systems, companies and industries and on the evolution of industrial competition. He says modularity allows things of great complexity to be designed and built in decentralized environments with low overhead costs. His research has focused especially on the computer industry.

Management guru Peter Drucker recently told *Computerworld* [Business, May 3] that IT has done little to help management beyond automating operations such as payroll. Do you agree with that? I think that's a healthy skepticism. But I do think there are some things about the IT revolution that are having a profound impact on leadership and on management. First, the pace at which things move today has quickened, and that has changed the rhythms of business. IT has been the driving force increasing that pace of change, and that's changing managerial structures and processes.

Another example is finance. There has been a revolutionary change in the world financial system, facilitated by IT. The whole area of risk management has taken on a very different cast because of changes in financial markets, the development of new financial instruments and the tremendous diffusion of IT. So today, there is in the managerial tool kit a whole set of options and instruments for senior executives that was not there without IT to support them. A simple example is the ability to hedge financial risks in international markets by taking advantage of the very liquid markets for foreign currencies. IT has made these transactions much easier.

Third, I believe that what's driving the computer world is a principle of technology and of economic organization that I call "modularity." That allows you to create incredibly complex systems in a highly decentralized environment. There are thousands of firms in the computer industry, and many of them are producing just pieces of a system, but the pieces all get integrated into a highly functional, complex system such as the Internet that no one totally owns or controls. That principle is beginning to work its way into more traditional sectors, and it's all driven by IT.

What more traditional sectors? Take utilities as an example. Utilities used to be highly regulated, and they produced a stable stream of earnings but not rapid growth. That's not the world of the electric utilities today. The industry is much more dynamic. Some of that is deregulation, but some is due to the creation of totally new structures that allow firms to trade electricity around the networks.

Enron swaps, through complex contingent contracts, the right to natural gas in Texas, say, for the right to electricity generated in Washington state, often through a several-sided transaction. These kinds of contracts and the ability to track and execute them depend on the low cost, speed and flexibility offered by powerful computer systems. So technology and the principle of modularity are coming together to transform an industry and create for management completely new options they didn't have before.

What are the implications of these trends for management? A fundamental lesson is that leaders in companies are going to have to be good at designing enterprises — configuring the relationships and contracts and structure that create value for the organization.

I have to decide who's going to design a product, who's going to make it, who's going to sell it and who's going to service it. Where do I get my supplies, what pieces do I own and what do I outsource, and what's the contractual deal that I strike? Where do I get my people, and what kind of relationship do I want with them?

These things have always been important, but you used to have so many fewer options. Today, IT, and the consequent increase in options, has

WHO IS HE?

Kim B. Clark, 50, is dean of Harvard Business School in Boston. He earned his Ph.D. in economics from Harvard in 1978 and has been a member of the university's faculty since.

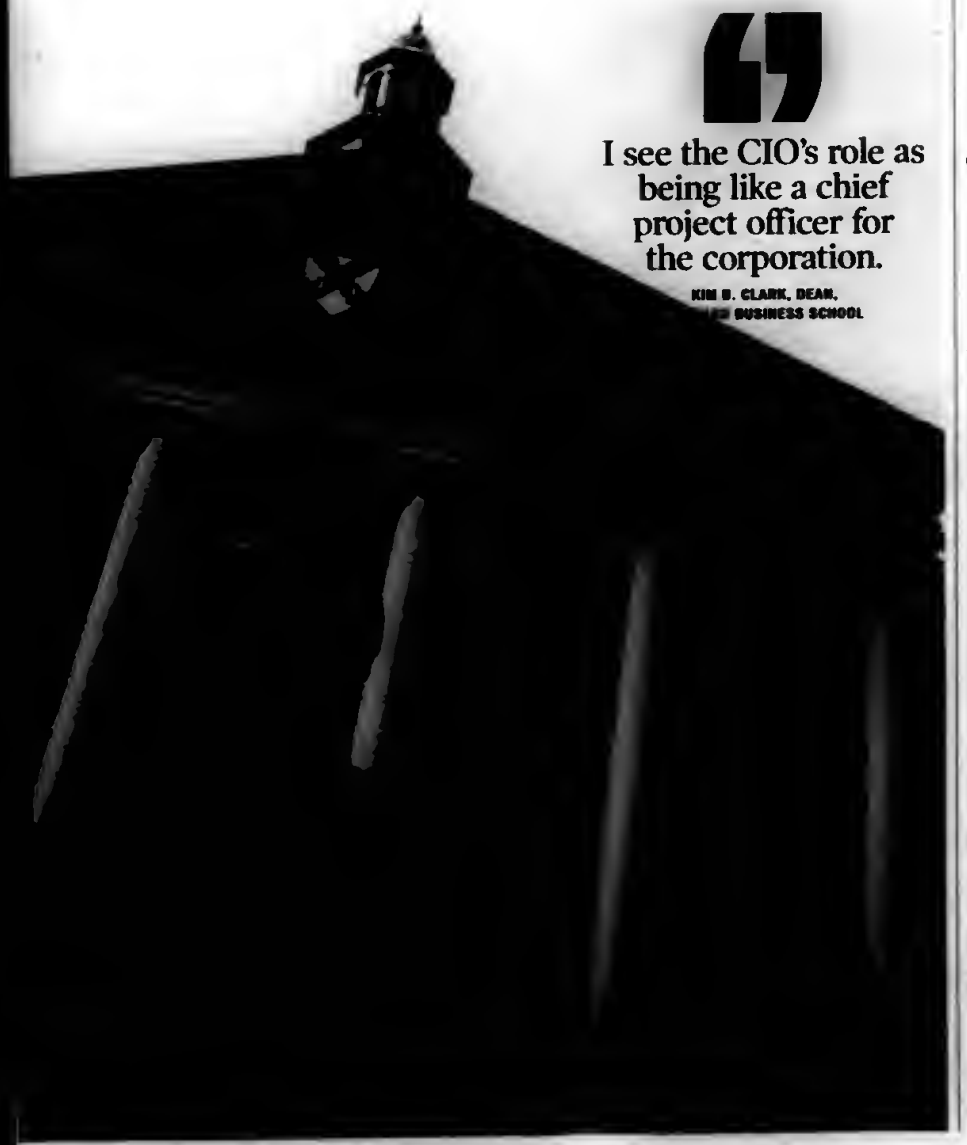
made the design of enterprise a crucial leadership task.

Is there a role for the IT manager in this design effort? There's a fundameotal role. IT executives have to be substantive contributors to the general management of the enterprise. They cannot be simply managers of back-office operations or the plumbers of the company. You need a CIO who really understands the opportunities that new technology creates. They are going to become more like the chief financial officer has been — providing critical insight into the design of the eoterprise.

Much of what companies create is through projects. I see the CIO's role as being like a chief project officer for the corporation, and I'm not just talking about IT projects. IT is becoming central to most everything, so the IT guys are the guys you turn to to get things done.

Internet start-ups such as Amazon.com seem to illustrate the trends you cite, but how about older, more traditional companies? The strategy at Amazon.com has been to start with books, then work their way down a whole list of products that can be sold on the Internet. They are creating an enterprise as they are moving. The thing that knits it together is oot just IT — although that's the enabler — it's customer relationships.

All enterprises are going to have to face up to the fact that this set of technologies fundamentally changes the nature of business and creates both opportunities and threats. Now General Electric and General Motors and small companies and companies of every stripe have awakened to the fact that these technologies allow you to do things that are very powerful.



> I see the CIO's role as being like a chief project officer for the corporation.
>
> KIM B. CLARK, DEAN, BUSINESS SCHOOL

You talk about modularity on a kind of grand scale, but in the computer industry, the concept has traditionally been applied to software. Yes, well, look at what's happening today with Linux. That's very much the principle of modularity at work. You have literally thousands of people around the world who are writing new little Linux modules. Someone publishes one on the Internet, and hundreds of people see it and say, "Oh, that's kind of cool." So they take it, load it into their systems, run it and discover a couple of bugs. Immediately, e-mail goes out across the Net, and pretty soon someone announces, "I've fixed the bug." That gets published, and bingo, you have a new module for Linux that's tested, debugged and ready for prime time.

Modularity permits increasingly complex systems to be created in a highly decentralized environment, so it doesn't have the overhead cost associated with a highly interdependent system.

Will that style of software development take over the world? This open-source model has enormous energy. Will it take over the world? Will all software be free someday? Probably not. Will there be significant opportunity for this kind of software to develop? Absolutely. This is a very powerful model, but it's fragile. It depends on the willingness of a lot of people to participate.

You have called creating and owning a market the "Holy Grail of business." What do you mean by that, and how does IT enable it? There's now another design choice available to senior executives that wasn't there before. There's always been the design of a company's products and services. Then there's the design of the enterprise — its contracts, structure and so forth. Now there's the design of the markets in which the company operates. In a fundamental sense, eBay is a market. The whole point of eBay is to create a market, and then people go there to buy and sell things, but eBay doesn't own any of the stuff.

In 1997, a graduate of our school, Dave Perry, created a company called Chemdex. His insight was that the specialty chemicals business is very fragmented and be could use the Net to create a place where customers could go to find what they wanted and suppliers could list their stuff. He was able to lower the cost of doing business in that channel dramatically. So he created this market, and be owns it.

Is there a dark side to IT? Yes. It can dramatically lower the cost of evil such as crime and other mischief. The Internet makes it much easier to participate in and be affected by activities that are incredibly destructive.

Will government solve these problems? It's going to end up being a combination of industry, consumer groups and government. It's a very complicated situation. ◗

Anthes is Computerworld's feature writer for business and technology topics. Contact him at gary_anthes@computerworld.com.

FINANCIAL AND BUSINESS CONCEPTS IN BRIEF

Strategic Management

BY CHRISTINE WILLARD

STRATEGIC management is a concept to evaluate a business's position and competition, set a course for the future and figure out how to pay for it and get it done.

It's a challenge in the Internet Age because e-commerce is changing all aspects of strategic management: the direction in which companies should go, who their competitors are and how they should achieve their objectives. Information technology professionals are crucial players, not only in supporting the systems that brought these changes about, but also in seeing the future and leading the way.

Strategies and Objectives

Strategy in the Industrial Age involved the quest to build a better widget and sell it cheaper than the competition. Control was centralized in hierarchical management. Activities were linear and sequential.

But Information Age businesses must adapt to changing conditions and route problems to those who can best solve them to grow outward. Customers control the channels, demanding not only innovation in the products and services, but also in the business processes that deliver them, according a report titled "eBusiness Imperative" by The Concours Group in Kingwood, Texas.

But to get from an Industrial- to an Information-Age model takes some work.

"Having a Web site doesn't make you an e-business," cautions Rowland Archer, president and CEO of Haht Software Inc. in Raleigh, N.C., which creates prepackaged enterprise resource planning systems for the Web.

"The CIO has to be ready," says Nick Vitalari, co-founder and vice president at The Concours Group. "Any plans we make are likely to be valid only for short periods of time. Managers have to be cognizant that they need to be nimble and agile to cope. Traditional approaches break down."

That means the classic approach to strategic management is too cumbersome in an electronic world. That approach involves four phases: devising the mission statement; deciding the objective; reconfiguring and implementing a strategy to pursue the objectives; and evaluating how the company has performed.

But look at today's world. A car dealer who wants to spur sales might offer rebates on cars. Meanwhile, other dealers are creating the entire deal online and even delivering the car, points out Peter Sealey, co-director of the Center for Marketing and Technology at the University of California at Berkeley. "By the time you've gotten through the four phases of classical management, your competitor has eaten your lunch," he says.

The same competition exists in the steel industry. Bethlehem Steel Corp. requires three to four man-hours of labor to produce a ton of steel. But rival Nucor Steel Corp. has a knowledge-rich, computer-driven plant — and can manufacture a ton of steel in just 45 man-minutes of labor, The Concours Group reports.

"It goes beyond meeting IT needs," says Richard Hamermesh, senior lecturer at Harvard Business School. "IT can help the business create new strategies [and] give it a new advantage."

Conversely, "IT can become the business-prevention department if it can't get the capabilities in fast enough to meet the business' needs," Vitalari says.

The 'How'

Marketing is a key business function for any company with customers — and e-commerce is changing that, too. Making one, standard product and selling it to the masses — known as one-to-many selling — is being replaced by personalized, one-to-one marketing and even customized products such as online news bulletins delivered to customers based on the topics they want to read about. IT gets involved by offering those capabilities to its users.

Paying for It

Corporate financing has changed to respond to those new demands. Of course, long-term investment is still important to pay for infrastructure improvements such as high-speed networks. Money also has to be available for flexible, market-based planning. "It's more like a playbook in sports," Vitalari says. "Managers need to be able to make decisions weekly and monthly."

Finances also have to be available for new ventures. "During the year, people are going to come up with ideas that you need to implement. Nobody has a crystal ball in this area," Vitalari says.

Willard is a freelance writer in Los Osos, Calif.

DEFINITION

Strategic management uses business position, forecasts, financial budgeting, market and competitive factors to guide a company to success despite unpredictable events, fierce competition and internal struggles. The Internet has changed the transaction between customer and business from linear and sequential to the countless digital ways to go to market.

	E-BUSINESS	INDUSTRIAL BUSINESS
Basis of competition	"Smart" innovations in products, services and business processes themselves. For example, a washing machine that knows when to add bleach.	Business models; bigger, bolder packaging; improved gadget, but not the order of magnitude of a "smart" product.
Barriers to entry	Intellectual skills and real-world limits of time and space. Lack of financial capital, established brands, ability and skills.	Gaining funds to build a new factory. Location: If you're in an agricultural business, you need to be in an agricultural area.
Control	Customer	Producer
Marketing, sales and service	Mass personalization	Mass marketing
Time to market	Not time-zone-sensitive because of location. It doesn't matter that the brick-and-mortar factory or bank is closed.	Development time is dependent on raw materials, suppliers and legal issues.
Pricing	Transaction costs approaching zero. The same stock trade can cost $384 through a full-service broker, $146 through a discount broker and $8.95 through the Internet.	Based on goods on hand and cost of raw materials and labor.
Operations	Using knowledge to make the transaction	The actual process of creating the product
Organization	Multifunctional teams connected by the Web	Hierarchical departments

Are there business terms you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

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Life after PROJECT MANAGEMENT

ALAN LEVENSON

KAISER PERMANENTE'S DENISE MILLER: Getting people to talk is key

It's no secret that project management can be a stepping-stone to higher-ranking IT management jobs. Those who've recently made that leap say project management work provided the foundation for their new careers.

In the view of two IT executives who groom project managers, acquiring the skills for promotion is a matter of getting the right career-path training

By Steve Alexander

Denise Miller: People Skills Rule

DENISE MILLER has spent the past two years as a vice president and the California director of information technology at Kaiser Permanente in Oakland, Calif., the nation's largest nonprofit health maintenance organizatioo and an operator of hospitals and clinics.

Now based in Walnut Creek, Calif., Miller speot several years shifting between project management and line management positions.

"A lot of project management is people skills, and some of those techniques can be used in line management. One particularly useful technique is the ability to get people from differeot organizations talking to each other," Miller says.

She says her biggest project managemeot assignments included managing a human resources IT system for Kaiser Permanente in Northern California about seven years ago, and managing its call centers for medical appointments and advice about two years ago.

"Projects tend to involve a great deal of cultural change; they often mean changing the way client organizations do their work," Miller says. "So I think the skills underlying project management are must-have skills for any IT organization.

"There are tremendous opportunities if you manage projects in different parts of the organization," she adds. "You build up relationships with clients in those departments, and that can be a career path."

What did Miller learn from her days in project management? "How to get people to work together and do things differently," she says.

It also also gave Miller high visibility within Kaiser Permanente. "The projects I worked on were in trouble io one way or another, and I was brought in to resolve the issues and get the projects back on track," she says. "You usually work across different organizations on a project — and that can only help you in a later, line-management role."

John Oliver: Down to Business

JOHN OLIVER, a former IT project manager in Omaha, was recently promoted to a management position. He's now vice president of financial systems at Chicago-based True North Communications Inc., the world's sixth-largest advertising holding company.

After several years as a programmer, Oliver got his master's degree in project management and became a systems business consultant. He says he was essentially the manager of a six-person project team shifting mainframe applications to an IBM AS/400 at Hills Pet Nutrition Inc. in Topeka, Kan.

In 1991, he moved on to a job as information systems director at a small manufacturer of gas pipe fittings, Central Plastics in Oklahoma City, where he beaded a conversion from midrange terminals to PCs running terminal emulations. In 1996, he came to Bozell Worldwide, a forerunner of True North, to head a project to shift the company from a midrange system to a client/server system.

"For people who have been doing work that is more oriented around technology and less involved with business, project management is a very good way to learn the business of the company," Oliver says.

After Bozell became part of True North last year, Oliver found himself migrating up to 100 company locations from an AS/400 to a Unix system. When an IT vice president left following the merger, Oliver had a chance to move from project management into that position. About 20 of the firm's 250 IT employees now report to him.

Oliver says he believes that the opportunities now open to him include higher-level IT jobs or the ability to shift to the business side of the corporation. Project management also helped Oliver learn the business — helping him pick up management basics such as how to write and speak more clearly, and the chance to gain experience organizing large work efforts, he says.

"I think one of the biggest things technology people struggle with is dealing with other people, because most IT people are good with technology and machines but find the people issues more difficult," he says. "I worked through that."

Alexander is a freelance writer in Edina, Minn.

What Does the Future Hold?

Some of the roles to which project managers can aspire include systems development, IT operations, technology planning and business services such as groupware and knowledge management, says Henry Neidermeier, director of national project management at Kaiser Permanente's IT arm.

Neidermeier says he bases his decision on whether to advance a project manager largely on that person's people skills. "I'm not undervaluing the necessity to have technology grounding. That's the table stakes. But the ability to work cross-functionally in an organization and bring groups to outcomes is what I look for," he says.

Neidermeier says he also measures a project manager's success at balancing a project's scope and objectives, time schedule and resources.

John Seral, CIO at GE Plastics, a Pittsfield, Mass.-based business unit of General Electric Co., says he tries to give project managers three experiences that will qualify them for promotion: An international assignment, a thorough grounding in quality techniques and a single area of deep technical expertise.

A project manager with promotion potential could complete all three in as little as 18 months, but needs to finish them within about three years, he says.

"I look for the three E's: energy, edge [leadership qualities] and energizing others," Seral says.

– *Steve Alexander*

Dear Career Adviser:

I was a technical and application consultant until turning more to project management, sales, business development and consulting management during the past three years, with an emphasis on Oracle applications. With electronic commerce emerging strongly, should I reinvest my time on the technical and operational aspects of e-commerce and become an implementation expert? Or should I stay on my current path and "sell" e-commerce consulting, which requires only a high-level understanding of e-commerce?

— EITHER

Dear Either:

Interesting to see your two choices combine both technology and customer interaction in a hot job market that's paying significant base salaries, bonuses, stock options and sign-on bonus packages.

Sales could certainly offer more of an immediate upside with packages at $200,000 to $250,000-plus, provided you produce. But you'll need a Rolodex of ready contacts, a sales mentality to close deals pretty fast to make your numbers and a company that stands behind you.

In sales, your mission will be to become a rainmaker capable of generating constant cash, and your career path will focus on bringing in hot deals or maybe running a sales organization.

On the implementation side, your compensation highs and lows could be a lot lower but still excellent, provided you're with an organization that gives you performance bonuses and stock. In other words, the upside may be less and the travel great. You'll need to stay at the top of your game technically and discriminate implementation teams and deliver solutions on time and within budget.

Whichever path you pick, don't flip-flop. Interviewers like to package someone like you in a box, and going from sales to technical and back again could hurt you.

Dear Career Adviser:

I'm an AS/400 programmer with two years' experience. After graduating from an institute where I focused on the PC side, I'm now totally comfortable in an IBM AS/400 environment. Since Y2K projects are finishing up, I want to know if AS/400 has a future for me. I am a good learner and can cross platforms given the training and opportunity. Should I pursue a career in Oracle?

— AS/400 VIABILITY

Dear Viability:

I received several questions on the viability of RPG, AS/400 and HP 3000 careers, so here's information for all.

First, those midrange systems aren't going away any time soon; they're well-entrenched in providing supply-chain needs and retail, medical and mission-critical applications for insurance processing, airline reservations and enterprise resource planning.

But searching on www.dice.com or http://california.computerwork.com shows that although there are 100 jobs for RPG people, there are 250 to 350 for those with Java and C++ skills. And Dice.com cites 340 HP 3000 jobs, 1,700 AS/400 jobs and more than 3,000 Sun Solaris jobs. There are also more than 30,000 Unix job listings and some 26,000 listings for Windows NT.

Older computing environments still need to be supported, but to keep yourself viable in the market, be sure your employer keeps you on an upward path. Terry Ewing, president and CEO of Tidal Software Inc. in Palo Alto, Calif., says the AS/400 and HP 3000 are a development proving ground and offer a career path to Java, Internet, NT and Unix. Therefore, you're either working at a hot company that's upgrading and replacing those systems or your employer is smart enough to upgrade your skills to keep you interested in staying there.

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at **www.computerworld.com/career_adviser.**

Dear Career Adviser:

I am 43, with 16-plus years of IT experience centered on relational databases and Unix, working with Oracle for the past 10 years in client/server development, in [database administration] and back-end PL/SQL, PRO-C and modeling using ERwin. For the past two years, I have been working on data warehousing projects, mostly at the back end. I started in Cobol and mainframes, have experience in project management and have been a technical lead, database administrator, designer and analyst/programmer. I enjoy staying technical more than working as a project manager.

So far, my age isn't a problem, but I'm worried about future job searches. Should I curtail advertising my experience and credentials? Should I increase my technical skills or move up via management? — WORRIED

Dear Worried:

Stay as technical as you can in database-related technologies, says Nurm Matloff, professor of computer science at the University of California at Davis (http://heather.cs.ucdavis.edu/~itaa.html). Those technologies might include thin-client, object-oriented and Web- and intranet-based databases.

Second, get on a project using that "hot" technology right away, which will give you the hands-on experience employers want.

Finally, stick to hands-on technical over management. "At least for now," Matloff says, "managers are considered a dime a dozen." And if you're "older" and wondering how to approach the job market, check out Senior Staff 2000 at www.srstaff.com. ▶

WORKSTYLES

Take heart, Y2K workers: You may get to be Santa after all

BY STACY COLLETT

As if there isn't enough for you to do in November and December, what with your job, family and the busy holiday season, this year the Y2K problem could mean plenty of extra work hours.

If you can't get out of testing or fixing your company's systems or orchestrating contingency plans, there may be a way to squeeze a few extra hours into the day so all that other year-end stuff gets done.

DCC Inc., an education and referral services provider in Westport, Conn., has come up with a service dubbed Y2Kare that lets employers help their information technology employees manage personal responsibilities while fending off Y2K glitches.

Through the Y2Kare program, DCC will arrange for temporary child care or elder care in the evenings or on weekends; find vacation camps for children during school breaks; offer personal shopping, gift wrapping and catering; and provide concierge-type services like picking up dry cleaning.

Employers pay a negotiated rate for the program based on the number of employees and the number of locations covered. IT staff pay discount prices for the services they choose.

Helping Hand

"Our own [company] is going to be requiring our information technology support group to be available 24 hours a day throughout the Y2K transition. That created all sorts of care situations that people need assistance with, so we developed the program," said Peter Burki, CEO of DCC.

The company developed a similar program for The Coca-Cola Co. in Atlanta to handle the around-the-clock needs of its IT staff during the 1996 Summer Olympics.

Colgate-Palmolive Co., American Home Products Corp. in Madison, N.J., and Lucent Technologies Inc. in Murray Hill, N.J., have signed on to the year 2000 program.

Lucent uses similar referral services year-round, mostly for locating child care, according to Joan Fronapfel, work and family programs manager. Employees haven't been called to work during the year-end holidays, but if they are, the Y2Kare program "would definitely benefit them," Fronapfel said.

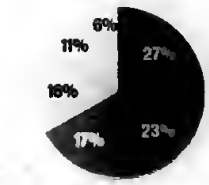
Industry observers said it's becoming increasingly important to offer Y2K staff perks beyond monetary bonuses.

"Anyone who loses their Y2K staff now is going to be in big trouble," said Stephanie Moore, an analyst at Giga Information Group Inc. in Norwalk, Conn.

Computerworld *reporter Barb Cole-Gomolski contributed to this story.*

Making Manager

Which is the most important skill in reaching management levels in the IT profession?



Base: Survey of 1,400 CIOs at companies with 100 or more employees

Dear Career Adviser:

I was a technical and application consultant until turning more to project management, sales, business development and consulting management during the past three years, with an emphasis on Oracle applications. With electronic commerce emerging strongly, should I reinvest my time on the technical and operational aspects of e-commerce and become an implementation expert? Or should I stay on my current path and "sell" e-commerce consulting, which requires only a high-level understanding of e-commerce?
— E-COMMERCE EITHER WAY

Dear Either:

Interesting to see your two choices combine both technology and customer interaction in a hot job market that's paying significant base salaries, bonuses, stock options and sign-on bonus packages.

Sales could certainly offer more of an immediate upside, with packages at $200,000 to $250,000-plus, provided you produce. But you'll need a Rolodex of ready contacts, a sales mentality to close deals pretty fast to make your numbers and a company that stands behind you.

In sales, your mission will be to become a rainmaker capable of generating constant cash, and your career path will focus on bringing in hot deals or maybe running a sales organization.

On the implementation side, your compensation highs and lows could be a lot tamer but still excellent, provided you're with an organization that gives you performance bonuses and stock. In other words, the upside may be less and the travel great. You'll need to stay at the top of your game technically and also manage implementation teams and deliver solutions on time and within budget.

Whichever path you pick, don't flip-flop. Interviewers like to package someone like you in a box, and going from sales to technical and back again could hurt you.

Dear Career Adviser:

I'm an AS/400 programmer with two years' experience. After graduating from an institute where I focused on the PC side, I'm now totally comfortable in an IBM AS/400 environment. Since Y2K projects are finishing up, I want to know if AS/400 has a future for me. I am a good learner and can cross platforms given the training and opportunity. Should I pursue a career in Oracle?
— AS/400 VIABILITY

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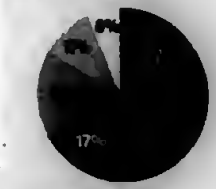

- Interpersonal skills
- Advanced technical skills
- Customer service orientation
- Business acumen
- Ability to meet deadlines
- Other/Don't know

Base: Survey of 1,400 CIOs at companies with 100 or more employees

SOURCE: RHI CONSULTING MENLO PARK, CALIF.

It was the only way we could photograph our latest router.

Just how fast is Ericsson's new Internet backbone router? 40 million packets per second fast. Great, but you also need reliability.

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Which is exactly why major ISPs and carriers can rely on the AXI 520 for the most demanding backbone applications.

ERICSSON

As if your IT workload wasn't heavy enough, suddenly you're also expected to handle revenue issues. Locate new business opportunities. And find new revenue streams. If it hasn't happened already, it will. When e-services transform the Internet, opportunities will explode exponentially. Businesses will scramble for a piece of the action. And servers will make all the difference. Fortunately, you've got the HP 3000 Business Server. It has the proven reliability to handle the coming onslaught of information, 24 hours a day. It's compatible with the applications you'll need. And it's easily integrated into an e-services environment with UNIX® and Windows NT.® What more could you ask for? Oh yeah, a vacation. www.hp.com/go/3000

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TECHNOLOGY

AUTONATION PEELS OUT

In 18 months, a four-member IT team at the nation's largest auto-seller leaned on vendors to create the industry's most advanced e-commerce site. But the team has yet to take the site nationwide, and rivals aren't sitting still. ▸ 62

NEW APACHE DEVELOPERS' GROUP

Open-source software can make corporate customers nervous about who's coordinating all those independent developers. Seeking to ease such fears, Apache developers have created a not-for-profit foundation to monitor development of the open-source Web server software. ▸ 59

MERCED: NO FORCED MARCH

While Intel readies its Merced 64-bit processor for shipment in mid-2000, the company is assuring high-end workstation users that they won't be forced to ditch 32-bit processors. ▸ 61

BT OPTS FOR VERISIGN

Scalability, interoperability and ease-of-use issues often hamper widespread deployment of secure e-mail in large organizations. British Telecommunications recently chose the Go Secure Service for Microsoft Exchange, developed by VeriSign, to secure its e-mail and other critical applications. ▸ 62

EXEC TECH

Portable printers make good travel buddies for on-the-road executives. We look at models from Canon, Pentax and Brother International. ▸ 68

INTEL GETS GRAPHIC

Intel recently showcased some fancy graphics on workstations that use its chips. The display was seen as part of the continuing Wintel effort to carve out more room in an arena once dominated by RISC machines — and boost the chip maker's most powerful processors. ▸ 61

QUICKSTUDY

Networking hardware: We define and explain routers, hubs, gateways, switches and more. If you're secretly ashamed that you don't know your repeater from your bridge, this is the cheat sheet for you. ▸ 66

FLASHBACK

In 1976, a bunch of computer hobbyists gathered in Atlantic City for the first "microcomputer" convention. One highlight was the Apple I, cobbled together by a couple of kids named Steve. ▸ 75

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JAMES SCHNEPF

OLD DATABASES SELDOM DIE

MANY LEGACY DATABASES don't even fade away, so IT managers had better learn how to deal with those old IMS- and Datacom-based systems. In this week's Field Report, four managers describe their strategies for leveraging legacy databases in the modern world. Their best bets: adding a Web front end and folding the old database into a data warehouse.

70

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SOURCE: COMPUTERWORLD IT INTELLIGENCE UNIT FRAMINGHAM, MASS.

CA Adds NT Fail-Over Tool

Computer Associates International Inc. has announced SurviveIT, software for Windows NT replication and fail-over management. According to the Islandia, N.Y., company, the product provides the ability for a secondary server to automatically take on the tasks of a failed server, without the need for rebooting or a separate log-in.

The price, which covers the primary and secondary server, is $2,495.

www.cai.com

Tivoli Data Protection for NT

Tivoli Systems Inc. is shipping Tivoli Data Protection for Workgroups, data protection and recovery software for Windows NT servers. The software lets administrators replicate Windows NT systems to local tape or disk drives. During replication, users retain full read and write access to all servers.

Pricing begins at $720 per server.

www.tivoli.com

Veritas Desktop Suite

Veritas Software Corp. is shipping Veritas Desktop Management Suite 3.5. The suite includes tools for operating system and software distribution; Windows NT backup; and software metering. According to the Mountain View, Calif., company, the suite offers a new graphical user interface.

Pricing is $56 per node for 50 nodes, or $37 per node for 1,000 nodes.

www.veritas.com

Support for Domino Servers

WebTrends Corp. has released the WebTrends Suite for Lotus Domino 3.0, Web site management software for Lotus Development Corp. Domino servers. The new version adds support for clustered Domino servers, allowing traffic monitoring across local or geographically dispersed server clusters, the Portland, Ore., company said.

The software costs $2,499.

www.webtrends.com

Apache Developers Form New Monitoring Group

Not-for-profit organization will provide legal, financial help to developers of open-source software

BY DORTE TOFT

THE APACHE GROUP, which developed the widely used open-source Apache Web server software, is establishing a more formal organization called the Apache Software Foundation to monitor development of the software.

The not-for-profit foundation will monitor development of the Apache HTTP Server, which is free software that runs on Windows NT and Unix, including the Linux flavor. The Apache Software Foundation (ASF) will also oversee related projects, including the Jakarta project, a collaboration among Sun Microsystems Inc., IBM and Oracle Corp. for development of Java code for the Apache environment.

On a Mission

The ASF's charter is to ensure the continuity of Apache projects beyond the participation of individual volunteers, as well as to contribute financial and legal support to the development community.

"Being a group had disadvantages. It's individuals who are liable in financial and legal matters," said Roy T. Fielding, a member of the board of directors of the ASF, a virtual organization with an office in Forest Hill, Md. Fielding is also a doctoral candidate at the University of California in Irvine.

"We always worried about a lawsuit," he said. "When you have 3 million or so Web sites using our software, [we figured] eventually someone would be annoyed. But so far it hasn't happened."

The move was to be expected, particularly given that the software has established itself in the business community, according to Phil Costa, an analyst at Giga Information Group Inc. in Norwell, Mass. For example, IBM is shipping Apache as part of its server software. "It gives more responsibility, also, for securing backward compatibility when new versions are developed," Costa said.

The work on the Apache HTTP Server was based on software developed by Rob McCool at the National Center for Supercomputing Applications (NCSA) at the University of Illinois. According to the Apache Group, McCool's software was used extensively on the Web, but the development stalled when McCool left the NCSA in 1994.

A small group of users, so-called webmasters, decided to coordinate their development work on the server software and formed the Apache Group. Their first release came in April 1995. However, a thorough overhaul of the code and documentation was needed. The result was Apache 1.0, released in December 1995.

A survey conducted by the U.K.-based networking consultancy Netcraft shows that Apache is deployed on 61% of all public Internet Web sites.

The ASF requires that all its projects remain open to new contributors via Internet collaboration, and it limits the distribution of software under its name to a set of approved open-source licenses. However, the day-to-day operations of each project are off-limits to the ASF, according to the group's statement.

Toft writes for the IDG News Service in Boston.

JUST THE FACTS

Apache Software Foundation

What it is: A not-for-profit foundation to monitor and aid open-source development of the Apache Web server

What it will do: Ensure the continuity of Apache projects beyond the participation of individual volunteers, as well as offer financial and legal support to the development community

To learn more: Visit *www.apache.org*

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Intel: No Forced March to Merced

Chip company says 32-bit processors will coexist with the 64-bit Merced for 'an extended period'

BY MATT HAMBLEN

WHILE INTEL CORP. readies its Merced 64-bit processor for shipment in mid-2000, it's also assuring high-end workstation users that they won't have to convert from 32-bit processors for a while.

"We think the [64-bit] family is going to coexist with the 32-bit family for an extended period of time," Intel CEO Craig Barrett told workstation users at the Workstation Leadership Forum in Burlingame, Calif., recently.

Some businesses have complained about the rapid pace of Intel processor upgrades in the past year, especially as Pentium II-based machines have been replaced by Pentium III PCs [Technology, March 22].

The prospect that users wouldn't be quickly forced to upgrade to Merced seemed reassuring to some at the forum.

"I don't know what value there is in moving up to 64-bit processing," said Korhan Sevenler, manager of engineering systems at Xerox Corp. in Webster, N.Y. In the past six months, Sevenler has installed 330 32-bit Windows NT-based workstations in a project to migrate engineers away from Unix machines.

INTEL CEO CRAIG BARRETT says companies aren't going to be forced into 64-bit conversion any time soon

Benefits of the '64'

Intel gave a glimpse of the future with a simulation of a Merced-based computer showing three digitally created 3-D images on the same monitor (see related article, this page). Merced will allow better graphics-creation for Web sites and will give engineers and designers the ability to render or change designs more quickly, analysts and Intel said. It will also speed data mining and analysis applications.

The price of the Merced will start at $5,000, but it will quickly drop to one-fourth that amount, as the prices of previous processors have, Intel officials said.

"A lot of digital content creators will be interested in it," predicted Art Scott, president of Digital Video Inc., a content provider in Menlo Park, Calif.

Analysts said corporations like to hold on to high-end workstations for several years and won't quickly replace new 32-bit machines, so having software that works on both will be important.

Also at the forum, Microsoft Corp. officials said they are writing Windows 2000 for both 32- and 64-bit processors. Chairman Bill Gates said Microsoft will be ready with an Office 2000 version for the 64-bit processor the day Merced is released.

Several analysts were upbeat about the value of 64-bit computing. When Merced appears with Windows 2000, "it will be extremely attractive and will arguably push Unix further out of consideration," said Rob Enderle, an analyst at Giga Information Group Inc. in Santa Clara, Calif.

Intel Pushes Graphics to Sell Chips

Aims to grow market for upcoming high-end chip set

BY JAMES NICCOLAI
BURLINGAME, CALIF.

Intel Corp. recently showcased some fancy graphics applications running on Wintel workstations, part of an effort to grow the market for the company's most powerful processors.

At the Intel-Microsoft Corp. Workstation Leadership Forum here, the chip maker showed off colorful data visualization applications, which display large volumes of financial, customer and other data in 3-D visual form.

"Looking at rows and columns of information is going to become impractical with the large amounts of data" available to businesses over the Internet, said Paul Otellini, an executive vice president in the Intel Architecture Business Group.

Intel and Microsoft have aggressively targeted the workstation market in recent years. That market used to be dominated by RISC machines that ran proprietary Unix operating systems.

Economies of scale offered by the Wintel platform mean workstations can be priced low enough that they are no longer the preserve of engineers, scientists and the entertainment industry, Otellini said.

At the end of the year, PC manufacturers will start to ship workstations with a new Intel chip set that has improved memory and graphics bandwidth, boosting the graphics capabilities of the Wintel architecture, Intel has said.

Demos

Otellini showcased a landscape modeling application from Terrain Experts Inc., a San Jose software company that renders a 3-D landscape that users can navigate in real time using a mouse.

And Avid Technology Inc., based in Tewksbury, Mass., demonstrated video-editing software that runs on an Intel workstation that can be used to edit and resize video clips for Web sites.

Niccolai writes for the IDG News Service in San Francisco.

each day Compaq helps Autobytel.com match drivers with 55 million $$ worth of autos over the Net without a pit stop

www.compaq.com/nonstopfacts

BRIEFS

Cisco Ships Serial Router

Cisco Systems Inc. is shipping the Cisco 805 serial router and hardware that provides Internet access via frame relay, leased lines or asynchronous dial-up.

The router was designed for small or branch offices that need to connect multiple PCs to the Internet, according to the San Jose, Calif., company. It features an Ethernet port and a serial port that supports synchronous serial connections of up to 512K bit/sec. or asynchronous serial dial-up with an external modem.

The router costs $999.

www.cisco.com

Software Balances Loads at Web Sites

This month, Platform Computing Corp. will ship the SiteAssure Suite of agent-based software for Web site load balancing and resource management.

SiteAssure software was designed to work with Cisco's LocalDirector and consists of two products: Load Manager and Incident Manager. Load Manager enables LocalDirector to distribute traffic according to the real-time availability of servers and applications, according to Markham, Ontario-based Platform Computing. Incident Manager automates the management of critical events such as spikes in Web traffic, the company said.

A site with five servers costs approximately $20,000.

www.platform.com

Marimba Adds Document Tool

Marimba Inc. has released DocService, software for document delivery across intranets, extranets and the Internet.

According to the Mountain View, Calif., company, DocService software was designed to automatically update delivered documents, compressing the changes and transmitting them to the client on a changes-only basis.

The price is $100 per DocService client and $1,000 per DocService server.

www.marimba.com

Car Retailer Builds Site the Fast Way

Team of four worked with key vendors to create advanced, robust site in 18 months

BY BOB WALLACE

BUILDING a cutting-edge, far-reaching e-commerce infrastructure for your company doesn't have to be a long-term, bank-breaking undertaking, according to car retailer AutoNation Inc.

In 18 months, working from scratch, a four-person information technology team at the nation's largest auto seller teamed with several vendors to create what experts have called the auto industry's most robust and advanced e-commerce site [News, June 28].

The biggest remaining challenges Fort Lauderdale, Fla.-based AutoNation faces are taking the site nationwide and adding technologies such as "push" to keep the online direct sales service ahead of a growing number of rivals.

AutoNation's Web site (*www.autonationdirect.com*), which entered a trial last month in Tampa, Fla., will eventually enable customers to buy vehicles from all of its more than 400 new- and used-car stores without setting foot in a dealership.

AutoNation started its e-commerce initiative last year by contracting Fusive.com to build a prospect management system it had designed. The Boca Raton, Fla.-based software company wrote the code for a stand-alone server. That move, which took roughly six weeks, was forced when AutoNation couldn't find an off-the-shelf prospect management package for the auto industry.

Next, AutoNation contracted with Seattle-based Cobalt Group to create Web sites for 270 of its dealers. That took only a few weeks, said Art DeLaurier, vice president of e-commerce technology.

Leads that come in to the dealers' individual Web sites are first sent to the prospect management system, where the customer data is time-stamped and recorded. Leads are then sent back to the linked dealer. That way, online sales specialists can track the progress of leads, and AutoNation can alert customers on service, recalls and special promotions.

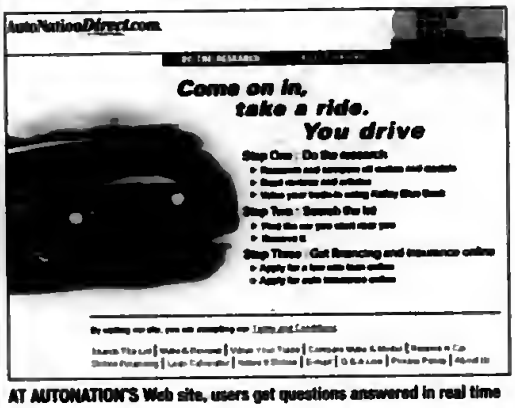
Leads that come to the central site are sent through the prospect management system and on to the nearest dealer. AutoNationDirect.com offers features not available at the dealers' individual sites, such as online financing, insurance procurement and a chat line.

The company also integrated the prospect system with SkyTel Corp.'s paging services. That cut AutoNation's response time from 48 hours to two. "This had a dramatic impact on customer service," DeLaurier said.

Linking the two was easy, he said, but IT managers should be sure to find a paging company that serves all their sites — not one that offers partial coverage.

And to keep people on the site, AutoNation added a product from WebLine Communications Corp. in Burlington, Mass., that supports a chat line feature whereby shoppers with questions can get answers from a call center agent in real time. AutoNation chose the WebLine technology over e-mail because of its immediacy.

AutoNation agents eventually will be able to help a consumer trying to decide between two sizes of sports utility vehicles, for example, by "pushing" information on each to the prospect while he's logged on to the site, DeLaurier said.



AT AUTONATION'S Web site, users get questions answered in real time

British Telecom Picks VeriSign to Protect Network

Service helps telecom giant integrate public-key infrastructure into applications

BY ANN HARRISON

Scalability, interoperability and ease-of-use issues have often hampered widespread deployment of secure e-mail in large organizations.

London-based British Telecommunications PLC recently chose the Go Secure Service for Microsoft Exchange, developed by VeriSign Inc. in Mountain View, Calif., to secure its e-mail and other important applications.

The Go Secure Service for Microsoft Exchange works with Outlook 98 and 2000 desktop clients and supports Exchange 5.5 servers. It allows for automatic publishing of OnSite-issued digital certificates to the existing Exchange global directory and automatic retrieval of certificates for encrypting and signing sensitive e-mail messages.

Go Secure, which will be available this month, lets 25 million Exchange users acquire and use digital certificates for secure mail without having to install proprietary or client software.

According to John Skipper, head of banking and payment services at British Telecommunications Electronic Commerce, the company will use Go Secure to protect its e-mail traffic and offer it in a suite of services to corporate e-commerce customers.

Ease of Use

"It's a major step forward for ease of use in corporate PKI [public-key infrastructure] solutions because it combines a fully integrated PKI into corporate-scale applications," Skipper said.

Go Secure leverages the VeriSign Trust Network of globally interoperable digital certificates. A digital certificate is software used to authenticate the identity of buyers or sellers in online transactions. "VeriSign's Go Secure Service for Microsoft Exchange allows enterprise customers to easily integrate VeriSign's PKI with the secure messaging infrastrucfure that Exchange Server 5.5 and Outlook 98 provide," said David Malcome, Microsoft Corp.'s group product manager for Exchange Server.

Skipper said BT will launch a trial rollout of the service this summer and added that he was impressed with the service's low start-up costs. He noted that VeriSign also provided a trusted third party for audit trails and key recovery.

Pricing for VeriSign's Go Secure Service for Microsoft Exchange starts at $15,000 for 1,000 users.

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HEWLETT PACKARD

Digital Lava Erupts

Dives headlong into video publishing, but bigger fish threaten its success

BY CYNTHIA MORGAN

MULTIMEDIA has historically been a dirty word to IT managers, but times are definitely changing. Now multimedia, or to use the more trendy term, rich media, is fast becoming a hot topic at many U.S. companies.

The corporate sector is increasingly inundated with training videos, management presentations, marketing collateral and so on — and almost all of it would be more effective if placed on the company intranet for easy access. Not many information technology managers have the time or the resources to manage that task effectively, however.

Digital Lava Inc., a 4-year-old Southern California startup, may do for video publishing what Adobe Systems Inc. did for desktop publishing 10 years ago. Like Adobe, the company's flagship VideoVisor products pull multisourced, multiformat data together in a single presentation and give companies the ability to digitize stored videotapes, index them and place them online.

The potential savings are enormous. Corporations are already using videoconferencing to save on travel costs, and networked video presentations can save even more by eliminating bandwidth and special equipment demands. It can relieve scheduling pressures by being available at the viewer's, not the presenter's, convenience. Stored instructional videos can be viewed by many employees at the same time.

An Active Medium

But the idea behind video publishing is to go much farther than a single, edited video presentation online. Digital Lava tools can be used to pull users into the video, turning it into an active medium that can be searched, annotated and replayed as often as necessary.

Authors can quickly drag and drop audio commentary, add on-screen explanations, diagrams, slide shows and a navigable outline into the video presentation, giving the audience the ability to skip irrelevant sections, test their knowledge with small quizzes and easily replay sections as often as necessary to understand a subject.

The technology is also being used to catalog video and audio recordings made for research purposes and organize the massive amounts of data they contain into analyzable information. Companies frequently use focus groups to fine-tune new product offerings, taking videotapes of potential customers encountering the product for the first time.

VPrism, a Digital Lava video indexing tool, lets researchers study tapes online and enter searchable keywords about the content at relevant points. A package designer, for example, could quickly search through hundreds of hours of recordings and bring up only those clips relating to packaging. Relevant clips and documents can be quickly assembled into a single presentation for an internal audit committee or a client.

A Digital Lava presentation, or VideoCapsule, can contain clips in virtually any popular multimedia file format, including MP3, .WAV audio, Microsoft Corp.'s Windows Media .ASF, RealNetwork Inc.'s G2 and RealVideo, MPEG-1, -2 and -4, QuickTime and .AVI video. The program accepts other data formats, too. The author can overlay diagrams and comments on images and videos within the presentation and insert live links to Web sites for more information.

The resulting presentation can be viewed as a Web page on a company intranet, stored on a server for playback with the Digital Lava client viewer or archived to CD-ROM. Users can search indexed material and add their owo notes, which can be passed on to the next viewer or returned to the file's owner, at the network administrator's option. Segments of the presentation can be bookmarked for sharing with other viewers.

To date, the company's largest corporate customers have used the product to enhance video instruction guides. Shell Chemical Co., for example, planned to migrate thousands of employees to Microsoft Office. IT managers reduced the potentially massive training bill by incorporating commercial Office training tapes from MicroVideo Learning Systems into their own VideoCapsule presentation.

Employees can now view almost 17 hours of training content, and the package can supplement the help desk when employees have specific questions about Office, said Shell IT manager Hesh Cohan. In addition, Shell's online training system ensures that new employees have the same training as their co-workers. ■

ONLINE VIDEO AND AUDIO are more than passive media, says Digital Lava President Joshua Sharfman

Digital Lava Inc.

Location: 10850 Wilshire Blvd., Suite 1260, Los Angeles, Calif., 90024

Telephone: (888) 222-LAVA; (310) 470-1149

URL: www.digitallava.com

Technology: Video publishing

Why it's worth watching: Digital Lava's video publishing systems can bridge the gap between the Web and video content such as instructional tapes, speeches and presentations.

Company officers:
- James Stigler, chairman and founder
- Robert F. Green, CEO
- Joshua Sharfman, president

Milestones: Company founded in 1995; initial public offering made February 1999

Employees: 21 and rising

Share scoop: Company went public at $7.50 per share; 6 months later is trading at $6.25 per share; IPO netted $9.9 million.

Products:
- VPrism: Organizes and manages digital video and audio clips, documents, images, Web pages and applications.
- VideoVisor Professional: Drag-and-drop video publishing system that links rich media with other content forms for Web, CD-ROM and other media.
- VideoVisor Web: Java-based video publishing tool; included in VideoVisor Professional.

Customers: Shell, ASI Entertainment, Cisco Systems Inc.

Red flags for IT:
- **Too much of a head start.** It'll take time to convince companies that video isn't just for entertainment. Digital Lava has a lot of convincing to do at some IT shops.
- **Swimming with sharks.** Digital Lava looks capable of grabbing enough market share to become a de facto standard. But if the big boys get there first, all bets are off.

COMPUTERWORLD emerging companies

TOP 100 DEADLINE

Entries for Computerworld's Top 100 Emerging Companies must be received by July 16. To nominate your start-up company, fill out and submit the form at www.computerworld.com/emerging.html.

[the buzz]
STATE OF THE MARKET

Digital Lava claims to have coined the phrase "video publishing," but it's not the only company to use it.

Old Masters

This year, Apple Computer Inc.'s motto should be "it ain't over till it's over." The company has come back from near obscurity with a vengeance and is pushing to regain the multimedia ground it lost in the past few years. Apple recently paired with another veteran, Adobe Systems Inc., to announce a joint video publishing bundle: Power Macintosh, Adobe Premiere video editing software and Adobe After Effects, a popular animation and special effects application. Apple and Adobe can't match Digital Lava's kitchen-sink ease of use with almost any media format, but give them time...

■ Apple Computer
www.apple.com
■ Adobe Systems
www.adobe.com/prodindex/dynamicmedia

Worth More Than the Tag?

MGI Software Inc.'s PhotoSuite has made surprising inroads into the business graphics market. It's fast, powerful, easy to learn and, at $50, underpriced. What PhotoSuite does for graphics, MGI's VideoWave purports to do for digital video. The $99 system lets novices combine video, audio, still images and text to build powerful presentations. VideoWave isn't specifically tuned for the Web right now, but MGI just acquired the assets of LivePicture Inc., which invented FlashPix and the Internet Imaging Protocol. Look for MGI to renew its video assault soon.

■ MGI Software
www.mgi.com

Video Powermongers

You would expect the inventor of Shockwave - a leading video plug-in for Web browsers - to know its way around Web video, and Macromedia Inc. certainly does. Its video editing package, Director, does everything from organizing video and audio clips to linking them to other content. It offers almost unlimited possibilities for adding interactivity and programmatic actions to a presentation. Newcomers may have trouble climbing the steep learning curve Director presents to novices; Digital Lava definitely has the upper hand there.

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HOT TRENDS & TECHNOLOGIES IN BRIEF

Networking Hardware

BY CARLA CATALANO

NETWORKING hardware plays a crucial role in helping information flow through a network the same way water flows through a series of pipes to different locations such as the kitchen sink, bathtub or outside spigot.

Computer networks in their lowest possible form include a couple of PCs and a printer. At their most complicated, they can include thousands of devices like PCs, printers and servers. If you have more than one computer sharing information or a printer, you're a candidate for a computer network, says Michael Speyer, an analyst at The Yankee Group in Boston.

The computer network enhances the PC's mission, which is to support cooperative tasks in addition to individual tasks, says Tom Nolle, president of CIMI Corp. in Voorhees, N.J. The scale and complexity of a network ranges from the likes of a simple mud hut to an elaborate skyscraper. "The hardware you use depends on the complexity of your particular network," Speyer says. Complicated architectural problems that may be present in large networks are solved with careful planning and the proper hardware selection, he adds.

Each piece of hardware serves a different function such as connecting the PC to the network, reducing traffic congestion and connecting different portions of a network.

Performance will suffer if the wrong hardware or combination of devices are placed on the network. For example, if someone tries to save money by using a hub when they really need the performance of a switch, then they've made the wrong hardware choice, says Ted Julian, an analyst at Forrester Research Inc. in Cambridge, Mass.

The more complex the network, the more likely it is that you'll need someone with networking skills to help manage it, according to Nolle. He says that to build a network with fewer than 20 users and servers, you should "hire a skilled and contracted professional," and for a network with 20 to 50 users and servers, you need to hire a skilled professional and learn some networking skills yourself. To build a network to accommodate more than 100 users and servers, you "definitely need networking skills because you'll be trusting yourself more than anyone else," Nolle explains.

The key to top network performance relates to effective network design. "You've got to consider what LAN technologies are involved, which PCs talk to which servers, which talk to other PCs and which go to the Internet, in addition to what applications are used," says John Morency, vice president of network solutions at Renaissance Worldwide Inc. in Newton, Mass.

There's a whole set of vendors and products whose mission is to classify, identify and correlate traffic types and patterns that enable designers to design efficient networks, he says.

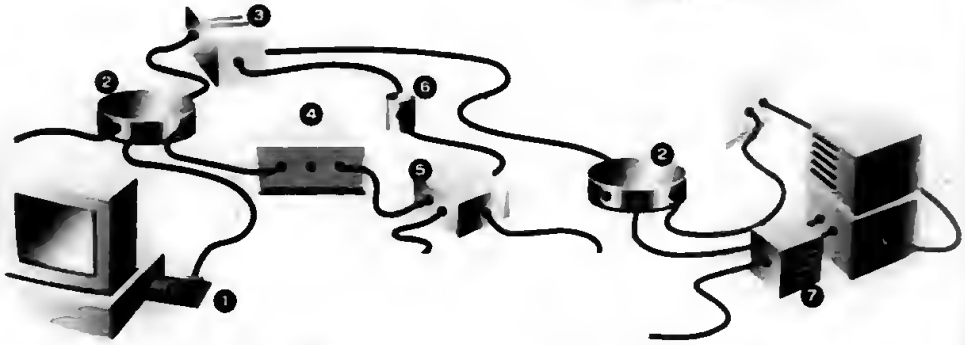
Catalano is a freelance writer in Holliston, Mass.

DEFINITION

A computer network is a series of computers and other processing devices that allow workers to share information. Networking hardware includes components that connect these devices together and determine how and where information flows through the network. Fundamental pieces of networking hardware include the network interface card, switches, routers and network cables.

Key Components of A Typical Network:

A typical network has several key components including networking cards, cabling, routers, switches and hubs, as well as bridges, repeaters and gateways.



1 Network interface card
A network interface card connects the computer to the network and allows devices to communicate over the network. It sits in a slot in the PC with one end of the network cable plugged in to the back. The other end of the network cable generally plugs in to a wall-jack connection, although it can plug directly in to the hub or switch for a small network. Another cable runs from there in to the network hub, which completes the connection.

2 Switches
Switches are devices that connect one portion of the network to another and direct information in the form of data packets to make sure they get to their proper destination. A switch might provide a connection for a single server or connections for several complete LANs. Switches are designed to handle multiple connections while improving network performance by providing each port, or connection, with the network bandwidth that they need without making the user change network interface cards or other hardware.

3 Router
Routers reduce traffic congestion on a LAN. They limit the amount of traffic that flows through a network by breaking the network in to little pieces known as LAN segments, according to Tom Nolle, president of CIMI Corp.

Routers connect the LAN segments so users on different LAN segments can talk to one another through a router. The router is designed to stop local traffic from entering and causing congestion on other LANs.

4 Bridge
A bridge spans two network LAN segments. Few organizations use bridges today because switches offer the same functionality.

5 Hub
A hub is like an intersection where different network links come together, but it's "an old technology [replaced by the switch] used mostly at the very low end of the market," says Ted Julian, an analyst at Forrester Research Inc. in Cambridge, Mass.

"A hub is like a one-way road where all cars share the same lane, which can lead to poor performance and congestion," says Michael Speyer, an analyst at The Yankee Group. "A switch is like a highway where every car has its own lane and hence no congestion," he adds.

Large companies that still use hubs in their networks are phasing them out because "they don't offer the efficiency that switches offer," adds Stan Schatt, an analyst at Giga Information Group Inc. in Cambridge, Mass.

A hub is like a "party line" where everybody talks at once, but a switch offers a direct connection to the particular PC, he explains.

6 Repeater
This is an old technology that's rarely used. Its purpose is to extend the physical reach of a network. Repeaters were used to overcome distance limitations associated with traditional LAN technology, says John Morency, vice president of network solutions at Renaissance Worldwide Inc.

7 Gateway
Gateways provide translation between one networking technology and another, like TCP/IP and IBM's SNA.

MORE ONLINE
For more information on networking hardware, visit our Web site. www.computerworld.com/more

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

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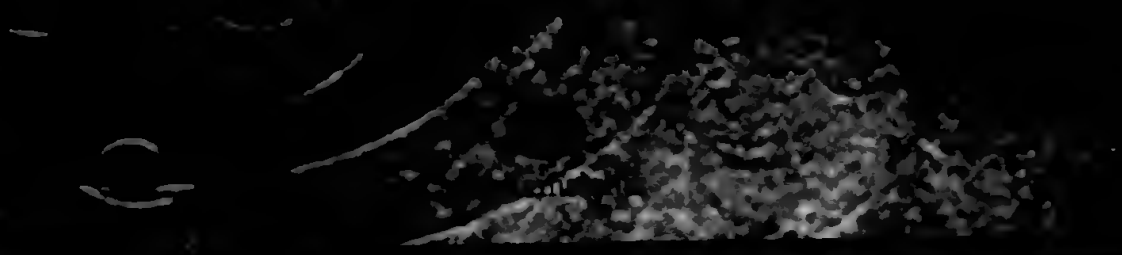

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Printers Hit The Road

BY CHRISTOPHER LINDQUIST

LONG NIGHTS at the local copy shop aren't exactly restful for traveling executives and salespeople who need to update presentations, print contracts and modify sales proposals on a daily basis. But with the latest portable printers and a laptop, those after-hours binges could be replaced with a quieter night in a hotel room.

Today's portable printers weigh 2 pounds or less and will fit easily into a briefcase, making them ideal traveling companions for on-the-road executives.

And although they don't offer the paper-handling options and speed of most office printers (Canon Computer Systems Inc.'s BJC-50 tops out at 5.5 page/min. for black and white and only 2 page/min. in color, for instance), the latest ink-jet models do borrow print-head technology from their desktop cousins, so they produce fine detail and eye-pleasing color and black-and-white output.

Unfortunately for buyers, however, the portable printer selection isn't huge — several major printer makers don't even offer portable models. But you still have a few decisions to make.

Choices

First, there's thermal vs. ink-jet. Thermal printers use heat to darken special (and quite expensive) heat-sensitive paper. Ink-jet models spray tiny drops of ink onto inexpensive ink-jet paper to create characters and graphics.

Thermal printers such as Pentax Corp.'s PocketJet II print only in black and white, but they also don't require you to replace pricey ink cartridges.

Ink-jet printers like the Canon BJC-50 can produce color output, but they also tend to be larger and heavier than thermal models.

Most portable printers support Windows 3.1, 95 and 98 and Windows NT. If you plan to use your printer with a Windows CE device, make sure the printer includes CE drivers. In some cases, you'll have to download them from the maker's Web site.

Many portables also offer at least a couple of connection options, with a proprietary parallel cable being the most common. Some offer Infrared Data Association port connectors as standard or as an optional add-on. Other portable printers connect via serial ports or PC Card adapters.

All of those connection types will probably be superceded by smaller, simpler and faster Universal Serial Bus (USB) connections in the relatively near future, however. And even USB may take a backseat eventually, says Rob Enderle, a vice president and research leader at Giga Information Group Inc. in Cambridge, Mass.

But you don't need any new technology to take advantage of the latest portable printers. Following are reviews of three of the most current models available.

Lindquist is a freelance reviewer in Moss Beach, Calif.

MORE ONLINE

For more information on printer types, visit our Web site.
www.computerworld.com/more

THE PENTAX POCKETJET II doesn't need pricey ink cartridges

BJC-50 (color ink-jet)

Canon Computer Systems Inc.
www.ccsi.canon.com
$349 estimated

About the size of a cigarette carton and weighing barely 2 pounds, the BJC-50 hardly looks like a printer. But Canon packs a lot of features into the small, dark gray box.

The printer connects to your PC or Windows CE device via an infrared port or proprietary printer cable. A lithium-ion battery pack or the included AC adapter provides power. Canon offers an optional 30-sheet paper feeder ($60) and a scanner cartridge that turns the printer into a 24-bit color scanner and photocopier ($85).

On plain ink-jet paper, my test documents printed with bright colors, although text was a bit fuzzy and not quite black. Printing on Canon's high-resolution paper sharpened and darkened text. And Canon uses a separate black-ink cartridge; if you print a lot of black-and-white documents, you can simply replace that one inexpensive cartridge (unlike Brother International's MP-21C, which uses a combination black/cyan cartridge). Canon estimates print costs of about 3 cents per black-and-white page and 16 cents per color page.

PocketJet II (thermal)

Pentax Corp.
www.pentax.com
$399

At about half the weight and one-fourth the size of the BJC-50, the Pentax PocketJet II thermal printer may be a perfect fit for anyone who needs the ultimate in printer portability and doesn't need color.

Pentax's special paper isn't as thin or glossy as normal thermal fax stock, which makes it more suitable for storage as well as handwritten annotations or highlighting. A slight yellow tinge separates it from good-quality ink-jet paper, however.

The paper's expense – about 8.5 cents per sheet – means you won't save anything over ink-jet printing costs for black-and-white documents, either, even though you never have to replace an ink cartridge.

The printer attaches to your PC with a proprietary parallel cable or via an optional infrared adapter ($115). In print tests, the PocketJet II delivered crisp black-and-white documents without the "bleeding" common with ink-jet printouts.

At nearly $400 for a complete kit (including cables, battery and adapter), the PocketJet II isn't cheap. But if you need a reliable, simple printer that can go anywhere with ease, it's hard to beat.

MP-21C (color ink-jet)

Brother International
www.brother.com
$335 estimated (Cdx model)

Brother's MP-21C is a unique portable printer designed for convenience while offering excellent print quality to boot.

Although similar in size and weight to the Canon BJC-50, the MP-21C doesn't have a battery that will need recharging. Nor does it connect to your PC via a clumsy parallel cable or touchy infrared port. Instead, the MP-21C hooks up with and draws power from an included PC Card adapter. That's convenient, but it might be a problem if there isn't an AC power outlet in sight and you need to print a document from a laptop that's already low on battery power. The MP-21C is the only printer we reviewed that doesn't offer drivers for CE devices (although they should be posted to Brother's Web site in the coming months).

When it came to print quality, the MP-21C delivered text that was a bit more black – if not quite as sharp – and colors slightly brighter than those from the BJC-50.

Like the Canon, the MP-21C won't replace a high-end desktop printer for photos and larger print jobs, but it's more than adequate for on-the-road work.

CANON'S BJC-50 color ink-jet printer claims 100 pages per battery charge

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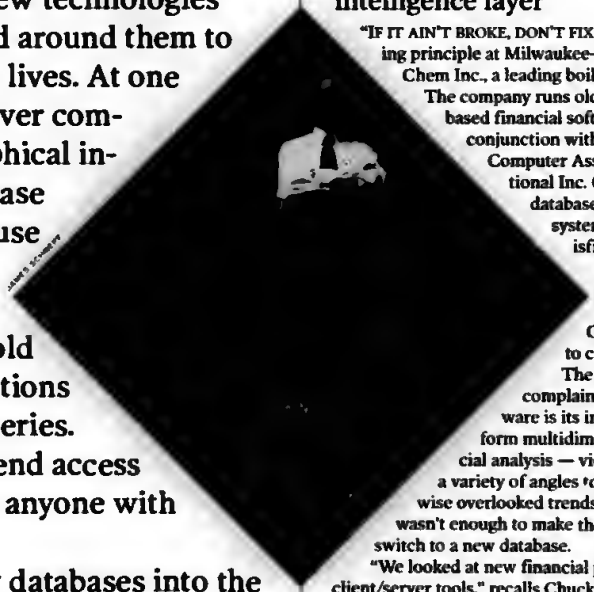
BUSINESS WITHOUT INTERRUPTION VERITAS

New Life FOR O

By Alan Radding

OLD DATABASES don't usually die. Unlike old soldiers, they don't even fade away. More often than not, they just keep chugging along in the background as new technologies are deployed around them to extend their lives. At one time, the new technology was client/server computing, which gave users a friendly, graphical interface to connect with the legacy database on the back end. Then, the data warehouse emerged to off-load copies of the data for decision-support, analytic and business-intelligence purposes, freeing the old database to continue processing transactions unhindered by resource-hungry user queries. Today, Web technology promises to extend access to data contained in legacy databases to anyone with a browser.

There are several ways to bring legacy databases into the modern era. The following is a look at four examples of how they work in real life.



Business Intelligence

Creating a new database staging area and adding a business-intelligence layer

"IF IT AIN'T BROKE, DON'T FIX IT" is the guiding principle at Milwaukee-based Aqua-Chem Inc., a leading boiler manufacturer. The company runs old mainframe-based financial software packages in conjunction with a host-based Computer Associates International Inc. CA-Datacom database management system. Generally satisfied with the performance of the mainframe system, Aqua-Chem is reluctant to change.

The company's only complaint with the software is its inability to perform multidimensional financial analysis — viewing data from a variety of angles to uncover otherwise overlooked trends — but that wasn't enough to make the company switch to a new database.

"We looked at new financial packages and client/server tools," recalls Chuck Norris, Aqua-Chem vice president and CIO, but the company stuck with the legacy systems. "We liked the security, functionality and reliability of the old system."

Instead of changing systems, Aqua-Chem aug-

LD DATABASES

mented its core financial systems with a new database and business-intelligence tools. It opted for Microsoft Corp.'s SQL Server DBMS to create a financial server running Cognos Inc.'s business-intelligence tools. Manufacturing, sales and other data are regularly extracted, transformed, transferred and loaded into SQL Server using Informatica Corp. data warehouse products. At the SQL Server database, Aqua-Chem managers access, analyze and manipulate the data through online analytical processing (OLAP) cubes created with Cognos tools.

"People now access the financial server over the intranet, go to their particular cubes and do what they need to do," Norris explains. Using the Cognos tools, managers can analyze products or customers. The mainframe system continues to handle all the core financial processing.

The business-intelligence system has let Aqua-Chem virtually eliminate paper. In the past, the company generated dozens of greenbar reports, split them up for distribution to various managers and sent them to its 11 plants across the U.S. and Canada. "Now, we do not have even one report," Norris boasts. Managers who want a printed report access their OLAP cube and print out the parts they want.

Norris is so comfortable with the mainframe and the older applications that the company recently ordered a new IBM OS/390 mainframe. Norris says he doesn't mind the old CA Datacom database except for one thing: He says he feels captive to CA, which he says has been uncooperative in the areas of Datacom licensing and pricing. IBM is wooing him with low pricing and flexible terms for DB2, and it's tempting. "I'd love to convert from Datacom to DB2 just to get CA out of my hair," Norris says, but his 18-person information technology staff doesn't have the manpower to handle a database migration, at least not until something breaks.

Continued on page 72

What, Exactly, Is a Legacy Database?

The answer is open to interpretation. Obviously, nonrelational databases, such as IBM VSAM or the late Digital Equipment Corp.'s RMS, which run on proprietary hosts, are clearly legacy databases. But older relational databases can also be legacy. "There are a lot of legacy relational databases out there," observes Philip Russom, director of data warehouse and business-intelligence service at Hurwitz Group Inc. in Framingham, Mass. There are also a lot of PC-based Microsoft Corp. FoxPro, Ksoft Inc. dBASE and Btrieve Technologies Inc. Btrieve database applications still running. Those, too, are legacy databases.

A large part of the reason legacy databases linger on as long as they do is that "most companies are paranoid about getting rid of them," Russom says. Those databases, usually tightly coupled with critical production applications, operate at the very heart of the company. As long as they're working – efficiently processing the necessary volume of transactions – companies are loathe to change.

The risk of disruption of critical business functions and the cost of changing is too great. Instead, companies insulate the legacy databases behind intermediate layers – staging areas for functions the databases can't perform by themselves.

Companies will reluctantly abandon a legacy database only when they have no choice. "The most common reason companies change databases is that they put in SAP," says Kris Newton, research manager at Strategic Research Corp. in Santa Barbara, Calif. SAP requires that the company have a modern, relational database. Another reason a company may change databases is if it simply hits a wall – some inherent limitation in the legacy database design that limits the number of records, the size of a record or kind of data types it can handle, Russom adds.

Instead of abandoning legacy databases, most companies continue to use them for production processing while they build decision-support and end-user access around them. Common approaches are to add a business-intelligence front end, off-load data to analytic applications, off-load data into a data warehouse or add a Web front end. The Web front end is emerging as the solution to which almost everyone is heading. Often companies will combine those approaches.

Continued from page 71

Analytic Applications

Making information directly accessible to managers without the bother, delay and expense of a conventional data warehouse

TOP MANAGEMENT at Blue Cross/Blue Shield of Florida in Jacksonville, understands the value of information in the high-pressure health care industry. But the operational data that managers most need sits on a mainframe system running IBM IMS and CICS, which prevents them from quickly getting at the information. And because different applications and systems are used to capture and process different pieces of data, "managers found it difficult to look at the business as a whole," notes Twanna Swift, operations project consultant of Blue Cross/Blue Shield's Management & Evaluation (M&E)/Quality Program.

Top management wanted a centralized place where executives could view and analyze all the data. Both the M&E group and corporate IT separately picked up the challenge. After looking at various options, the M&E group decided to build what amounts to a logical data warehouse using SAS Institute Inc.'s analytical applications and data tools. The IT group took the conventional route, building a physical data warehouse from scratch using Oracle Corp.'s tools. The race was on.

M&E also considered building a conventional data warehouse using a relational database, but quickly realized that "the conventional data warehouse was going to take too long and be too much work," Swift says. Instead, it started to explore less IT-intensive options. "We studied a lot of literature on the tools and options out there," Swift explains. SAS consistently ranked high in every published tool evaluation the group reviewed, so the health insurer finally opted for the SAS approach after SAS created a prototype for M&E, Swift says.

In phase one, which is rolling out now, senior vice presidents and directors are using the new system to analyze staffing and budget models. In phase two, the system will be extended to everybody via the corporate intranet.

The project is SAS end to end, from the analytical applications and stored data sets to the graphical user interface and, eventually, the Web interface. The analytical system will hold 18 months of production data. The group has already collected 400G bytes of data in SAS data sets and is adding about 5G bytes each month.

In the race against the IT group, M&E could claim a clear win: It brought in the SAS approach for less than $1 million, while Swift says the IT group's Oracle-based data warehouse, which is barely out of the starting gate, is projected to cost more than $10 million (IT executives declined to be interviewed). The M&E project went live in about six months, and the IT group's data warehouse is still years away from providing useful information.

Data Warehouse

Building a conventional data warehouse using an incremental approach to deliver results fast

OWENS & MINOR INC. in Richmond, Va., knew in early 1997 that it had to gain better access to its production data in legacy databases. What it didn't realize at the time was that by gaining access to its legacy data, it was creating a new revenue opportunity.

The company maintains most of its data on the mainframe in a series of IBM DB2, IMS, and VSAM databases and transactional flat files. But managers at the $3 billion surgical supplies company were frustrated when they needed information. "All these databases are independent, which makes it hard to do queries," says Don Stoller, director of information management. The company used a few tools, such as Datawatch Corp.'s Monarch, which creates and delivers electronic versions of printed mainframe reports to a PC, but it wasn't sufficient. "We wanted a more multidimensional view of the data," he says.

Deciding it needed a full data warehouse, Owens & Minor installed an Oracle database on a Unix server as the central data warehouse repository. It gave managers Business Objects SA's BusinessObjects as the query tool on the front end.

Taking a subject-by-subject incremental approach, the company built the data warehouse quickly, bringing up the first subject area, sales data, in five months beginning in early 1997. About every two months, it adds a new subject area. Today, the data warehouse contains data covering six subject areas, with work under way on a seventh and two more in the planning stages. The Oracle database contains 120G bytes of data, including more than three years of sales history.

DON STOLLER says Owens & Minor wanted a multidimensional view of data

The company uses Informatica's PowerCenter to extract, transfer and transform data from the legacy production systems and load it into Oracle. Today, Owens & Minor is using the data warehouse to bring its legacy data to internal staff at headquarters and those in the field.

The next step, Stoller reports, is to extend access to the legacy production data all the way to customers and suppliers. The company will do that through the Web in a project it has dubbed WISDOM — Web Intelligence Supporting Decisions from Owens & Minor.

"WISDOM is a way to let our customers and suppliers look at production data and make decisions," Stoller says. Ultimately, WISDOM is envisioned as a revenue-generating service. The company would miss the opportunity if the information were stuck in legacy databases.

Web Front End

Giving end users Web access to a data mart while avoiding the desktop support hassles of client/server-based data access

THERE ARE 1.1 MILLION public school students in the city of New York. They generate an enormous volume of data, which is stored in a variety of legacy databases: CA's IDMS, VSAM and others. "These legacy systems perform very well," reports Kamal Kumar, director of the office of students systems development for New York, but they're difficult to access for purposes of gathering management data.

Though the IT operational people are happy with the legacy systems, the school system's executives, administrators, managers, superintendents and 1,200 school principals are stymied. Under pressure to boost students' performance at their schools, they need fast, easy access to the data in those systems.

Making legacy data accessible to school system managers was a two-part challenge. First, the city had to get the data out of myriad legacy databases and into an intermediate-level database that people can access. Second, the city had to provide the users with easy access tools.

Complicating the problem was the city's reliance on IBM's SNA as its host networking standard. That forced it to rely on mainframe tools only. "This was the summer of 1997. Our only choices at that time were Information Builders or SAS," Kumar recalls. Based on benchmarking it conducted, Kumar's group selected Information Builders Inc.'s EDA middleware and Focus programming tools and IBM's DB2 as the new intermediate-level database.

To solve the first challenge, Kumar's group used Focus on the mainframe to access, extract and move the older mainframe data to the DB2. The data was ready by June 1998.

The second part of the challenge proved trickier. The schools are on a Windows NT network. To access DB2 on the SNA network, Kumar's group had to install client software on each user's desktop — a classic client/server solution that proved to be a desktop support nightmare.

A better solution turned out to be the Web. Using Information Builders' WebFocus, Kumar's group crafted a solution that allows administrators to go directly to DB2 via the Web. The use of WebFocus along with Focus on the mainframe also allowed Kumar's group to reuse much of their initial code.

In the end, easy Web access to information is expected to result in better performance at the schools. Because data has been so hard to get to, "most users don't use data. They make decisions off the cuff," Kumar explains. Now, they'll be able to make well-informed, information-based decisions that the school department expects will improve the schools.

Radding is a freelance writer in Newton, Mass.

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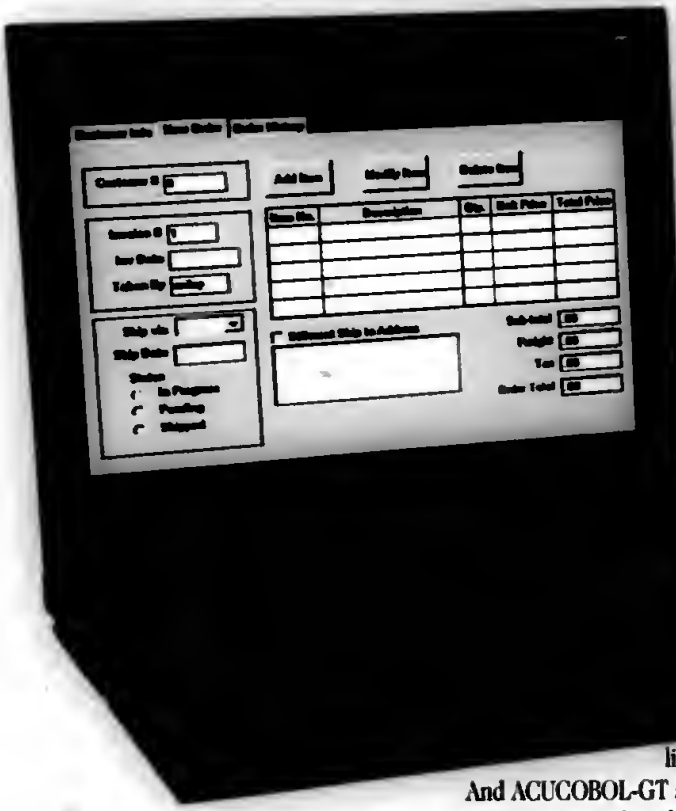

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Apple Debuts

'76 convention kicks off PC show industry, showcases start-ups

BY LESLIE GOFF

ABOUT 5,000 people flooded into the Shelbourne Hotel in Atlantic City on the last weekend in August 1976 for Personal Computing '76, the first national microcomputer convention. All were intent on one thing: getting their hands on one of those new microcomputer kits they'd been seeing in *Byte*, *Popular Electronics* and other hobbyist magazines of the time.

"People were racing around, trying to see everything and talk to the manufacturers," recalls show organizer John Dilks, then a field engineer at Western Electric Co. and now a technology deployment supervisor at Lucent Technologies Inc. "Usually, the owner of the company was there, and often that was the only employee."

What started out as a confluence of hobbyists helped kick off a major industry within the industry: PC shows, such as today's Comdex and PC Expo. It also helped kick off a 4-month-old start-up, a garage operation called Apple Computer Inc.

At first, Steve Jobs and Steve Wozniak turned down Dilks' invitation to exhibit their Apple I, which they had just begun distributing to the growing number of computer stores around the country.

"They said they were cash-poor," Dilks recalls. So Dilks helped set them up with a travel agent on the West Coast who was organizing a group flight to the show. He also arranged for the hotel to extend them credit for a room.

"The response to their Apple I was very exciting — people were buying it," Dilks says. "Up to then, it was a 'West Coast' computer, and now it was everyone's. The story was that they made so many contacts and took in so many orders that they went back to the West Coast in great shape and got financed."

Goff is a frequent contributor to Computerworld. Contact her at lgoff@ix.netcom.com.

HOT EXHIBIT: The Apple I board

1976

BY LESLIE GOFF AND LAURA HUNT

Bill Gates writes an open letter, first published in Micro Instrumentation Telemetry Systems' (MITS) newsletter "Computer Notes," accusing microcomputer hobbyists of stealing software and preventing good software from being written. "Nothing would please me more than . . . to hire 10 programmers and deluge the hobby market with good software," he states.

Steve Jobs and Steve Wozniak complete work on the Apple I, a single-board computer featuring MOS Technology's 6502 microprocessor. The two form Apple Computer on April Fool's Day. To finance production of the Apple I, Jobs sells his VW van, and Wozniak sells his Hewlett-Packard programmable calculator. They raise $1,350. In July, Apple begins delivering the Apple I, in kit form, to computer retailers for a suggested price of $666.66. Jobs meets with venture capitalist Mike Markkula, previously a marketing manager at Intel and Fairchild Semiconductor, who decides to ante up $92,000 for the start-up company.

Gary Kildall copyrights the CP/M operating system for personal computers, which he completed developing earlier in the year. CP/M made it possible for one version of a program to run on myriad computers using 8-bit microprocessors and became an industry standard.

Wang Laboratories debuts a word processing system that uses advanced computer technology.

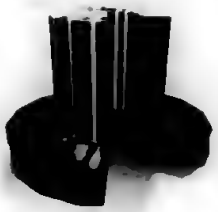
Microsoft refines and enhances Basic for microcomputers and begins selling it to other customers, including NCR and Citibank. The programming language was originally developed for MITS' Altair. In November, Microsoft registers its trade name with the Office of the Secretary of the State of New Mexico. Also that month, Paul Allen resigns as director of software for MITS to join Microsoft full time. Year-end revenue for the new company: $22,496.

Commodore International buys MOS Technology, which earlier in the year introduced the KIM-1 Microcomputer System, featuring the company's 6502 microprocessor.

Shugart Associates, a company founded by Alan Shugart, introduces its **5.25-in. "minifloppy" disk drive**, priced at $390. The drive and accompanying diskette were developed in response to a request by Wang Laboratories for a drive that could be used with a desktop computer.

Michael Shrayer completes development of Electric Pencil, an early popular word processing program for microcomputers.

Xerox management rejects proposals to market the Alto, an early personal computer developed at the company's research arm, Xerox Parc in Palo Alto, Calif.



The Cray I, which becomes the first commercially successful vector processor, is released. It's the fastest computer available at the time.

Nolan Bushnell sells his company Atari, to Warner Communications for $26 million.

Queen Elizabeth II of England sends an e-mail.

Charles Wang and three associates found Computer Associates International.

Dr. Dobb's Journal *of Computer Calisthenics and Orthodontia: Running Lights Without Overbyte* is published by the People's Computer Company.

OnTyme, one of the first commercial e-mail services, is developed by Tymnet Inc. It finds a limited market of potential users.

At the National Computer Conference, Data General displays one of its computer chips in the navel of a belly dancer.

In March, MITS, which developed the Altair personal computer, hosts the First Annual World Altair Computer Convention in Albuquerque, N.M. Twenty-year-old Bill Gates keynotes the event.

ComputerLand is founded by John Martin and Bill Millard. The duo open a pilot store in November in Hayward, Calif. Today, only a handful of independent ComputerLand stores exists.

Jimmy Carter and Walter Mondale use e-mail during their campaign to coordinate schedules.

Hunt is Computerworld's corporate librarian.

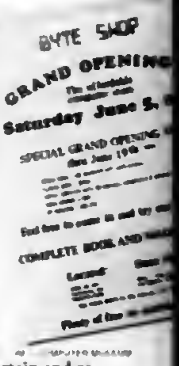
Computer Stores Multiply

BY LESLIE GOFF

Today, home PC users can buy a plug-and-play box just about anywhere. The computer retail phenomenon, born quietly in 1975, made significant strides in 1976 with the proliferation of computer stores around the country.

Among the most notable was The Byte Shop chain. Paul Terrell opened his first store in Mountain View, Calif., in December 1975. In January 1976, he started franchising the stores; by March he had incorporated as Byte Inc.

Jim Willing, now a strategic support systems engineer at Intel Corp. in Hillsborough, Ore., took his first computer-related job in the fall of '76 at a Byte Shop in Portland, Ore., when he was 18.



"I was a general-purpose wirehead," Willing says. "I stood in a little room behind a green curtain and assembled or repaired computers, wrote small programs and just about anything else people wanted. Because it was all so new, everything you did was breaking new ground."

In the summer of '76, Terrell ordered 500 Apple I circuit board kits for $500 each from Apple Computer Inc. co-founders Steve Jobs and Steve Wozniak. The $250,000 order let Apple gain the credibility it needed to secure financing.

At its peak, The Byte Shop had about 40 franchises, which are now all gone. The legacy lives on, however, both in the success of Apple and the fact that anywhere you can buy a refrigerator, you can pick up a PC as well.

■ Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.

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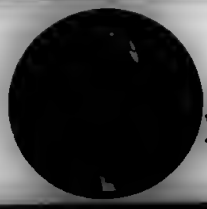

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Hiring in Triplicate

The Y2K efforts that tied up staff and resources are winding down, but IT in the insurance industry still has lots of work to do and not enough staff to do it – even with challenging work and generous compensation

By Candee Wilde

AS THEY enter the last laps of their massive year 2000 projects and begin to focus oo development efforts for the new millennium, informatioo technology hiring managers in the insurance indostry are racing to fill vacancies for IT professionals in a variety of areas.

Cobol programmers, database analysts, LAN managers and Web developers are all in high demand.

For IT professionals who barely know a benefit from a premium but are interested in a job in the insurance industry, there's more good news: Few, if any, industry-specific skills are required. "Once you get here, you have to learn the basics. But we've hired people from every industry who turned out to he excellent programmers," says John Cooke, CIO at Montgomery Mutual Insurance Co. in Sandy Spring, Md.

If the recent spate of mergers and acquisitions in the insurance industry makes some IT professionals nervous that they'll take a new job only to find their skills have become redundant, fear not. Merger activity has slowed significantly, and overall industry growth offsets that loss of IT positions.

Insurance companies, particularly large ones, have IT infrastructures that link mainframes, client/server systems and growing databases. On the data transport side, many companies are moving to the Internet and away from private networks and proprietary industry value-added networks. Those companies need people with state-of-the-art skills in database technology, network security, firewalls and Web application development.

"For the next five years, insurance will he an exploding industry," predicts Vaughan Osmood, an IT director at John Hancock Mutual Life Insurance Co. in Boston. "As we replace systems and the mainframe turns into client/server and client/server turns into the Internet, we will need lots of people with new skills."

Many Openings

Insurance firms are among the top 25% of all industries in terms of IT salaries, according to C. Mitchell George, year 2000 project manager at Kemper Insurance Cos. in Long Grove, Ill. Kemper has 60 to 80 positions available for entry-, mid- and upper-level IT professionals in a variety of areas, including application development, infrastructure development and database administration. Active recruiting efforts have met with little success, George says.

It isn't for a lack of money. A "good" database administrator is very much in demand, according to Cooke, and can expect a salary of at least $70,000.

"If you've got a few years under your belt, someone will gladly pay up to $75,000 or $80,000," he says.

George attributes the shortage of experienced IT personnel in part to independent contractors and consulting firms that have "stripped the benches of experienced personnel," he says. "A higher percentage of people in [IT] have become independent contractors or have affiliated with consulting organizations. That's a sea change for our business — that we're having to purchase such a high percentage of talent on an hourly rate basis from a contracting vendor."

Cooke says he lost a significant number of qualified Cobol people to Y2K consultancies offering pay he couldn't match. He was able to refill most of the slots, but often with less-experienced people, he says.

George points to the lack of IT pros who graduated in the mid-1990s — those who now have a few years of real-world experience — as another factor in the staffing shortage.

That lack of experienced personnel is exacerbated by the complexity of IT infrastructures at large insurance companies and the specificity of skills needed to build and manage them. For example, Kemper's current IT initiatives include tier-end client/server applications with a Web-based presentation layer, object-oriented databases and systems that require connectors to older systems. "This is complicated stuff," George says.

Several IT executives point out that the focus on Y2K remediation and testing has taken a toll on time and resources.

New project training for staffers in up-and-coming technologies had to he put on the back burner, they say. In some cases, companies that thought they were essentially finished with year 2000 work are being prompted by customers and auditors to continue testing.

"We're still chewing up a sizable chunk of application and technical support resources on Y2K," George says.

But the bottom line is that the insurance industry is rife with opportunity for IT people with a range of skills. There are positions with room for growth for database analysts, network security experts, LAN managers and Cobol programmers who can communicate well, work as part of a team, think logically, take responsibility for their work and accept new challenges.

It may not be the most glamorous industry, Cooke concedes, but it offers a stable working environment, good pay, opportunities for advancement and a chance to work with some of the newest technologies.

Wilde is a freelance writer in Easton, Conn.

Insured Income

Mean salaries of IT personnel in the insurance industry as reported by IT hiring managers:

TITLE	SALARY
Project manager, systems and programming	[illegible]
Project leader	[illegible]
Senior systems analyst	[illegible]
LAN manager	[illegible]
Senior programmer/analyst	[illegible]
Network administrator/analyst	[illegible]
Technical specialist	[illegible]
Programmer/analyst	[illegible]
PC technical support specialist	[illegible]

SOURCE: COMPUTERWORLD'S 1999 ANNUAL SALARY SURVEY

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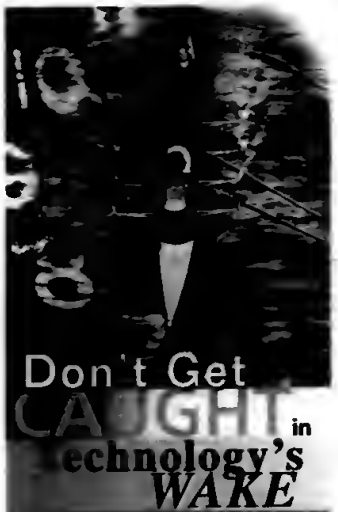

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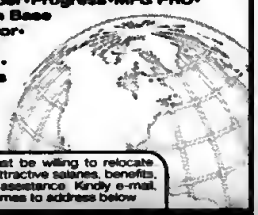

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Sr Software Quality Assurance Engineer needed by Waltham, MA Co. involved in Dvlpmt of Scientific Visualization S/ware Systems. Must have MS and 1 yr exp in dsgn, dvlpmt, testing of scientific visualization s/ware. Respond by resume to: Tony Close, QA Dept. Advanced Visual Systems, Inc. 300 Fifth Ave, Waltham, MA 02451.

Software Engineer needed by Comp. S/ware Consulting Co. in White Plains, NY for unanticipated client locs throughout US. Must have Masters in Comp Sci or Comp Engg. Respond by resume to HR Dept. Tenea Software Inc. 66 Greenvale Circle, White Plains, NY 10607.

Sr Software Consultant wanted by Cambridge, MA Co. providing internet-based business solutions. Must have MS in CS, EE, ME or related and 1 yr exp in dvlpmt of internet applics. Respond by resume to: Helen Carmier, HR Dept. C-bridge Internet Solutions, Inc. 219 Vassar St, Ste 2, Cambridge, MA 02139.

Software Engineer needed F/T by IS/IT Professional Services Co. in Red Bank, NJ for locs throughout USA. Must have Masters or equiv in Comp Sc, Engg or Math and 2 yrs Computer Software Dvlpmt/ Consulting experience. Respond by resume to: HR Dept. Configuration Management, Inc. 140 Broad St. Red Bank, NJ 07701.

Database Design Analyst wanted by Law Office & Computer Consulting Service in New York City. Must have 2 yrs exp as Systems Engineer and Bachelors degree. Respond by resume to: HR Dept, Law Office of James C. Nolan, 75 Maiden Lane, 3rd Flr, New York, NY 10038.

Network Engineer wanted by S/ware Dvlpmt & N/work Integration Co. to work in Metuchen, NJ and other unanticipated client locs. Must have Bach in Comp Sci, Comp Engg, Electronics or Electrical Engg and 2 yrs exp in network and systems design and administration. Respond to: HR Dept, Netcom Systems, Inc. 61 Pearl St, Metuchen, NJ 08840.

Software Engineer wanted F/T by Data Networking Co. in Hazlet, NJ. Must have Masters in Comp Sci, or Engg and 2 yrs software exp. Respond to: HR Dept, Village Networks, Inc, Suite 301, 100 Village Ct, Hazlet, NJ 07730.

Web Database Administrator needed by NJ S/ware Dvlpmt & Computer Consulting Co. for various client sites in Montvale, NJ & elsewhere. Must have Masters or equiv in Comp Sci/Engg and 6 mos software experience. Respond by resume to HR Dept International Software Solutions, Inc. 1648 Rte 130 North Brunswick, NJ 08902.

Network Engineer Sr (Software Engineer) wanted F/T by S/ware Dvlpmt & N/work Integration Co. in Metuchen, NJ. Must have Master's or equiv (Bachelor's + 5 yrs of exp.) in Comp. Sc. Comp. Engg. Electronics or Electrical Engg. and 1 yr of exp. in N/works, N/working or Systems Admin. Respond by resume to HR Dept. NetCom Systems, Inc., 61 Pearl St., Metuchen, NJ 08840.

Software Engineers (multiple positions) needed by S/ware Dvlpmt & Comp. Consulting Co. in Dayton, NJ for client sites in New Jersey. Must have 1 yr software experience. Masters or equiv in Comp Sci, Engg or Math req'd. Respond to: HR Dept, Nutek Consultants, Inc. 4 Sequoia Drive, Dayton, NJ 08810.

SENIOR SOFTWARE ENGINEER project lead with two years of industry experience to design, develop and implement software applications using Oracle, Developer 2000, SQL, C++ and Unix. Excellent communications skills required. Master's degree or equivalent required. Fax resume to: HR (781) 932-0895 or email: tbeth@raymondkarsan.com

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Senior Software Engineer needed by S/ware Dvlpmt Co. in Overland Park, KS. Must have MS or equiv in CS, Engg or Math and 3 yrs software experience (Bach +5yrs progressive exp also acceptable) Competitive salary Respond to HR Dept. BeyondNow Technologies, Inc. 5750 West 95th St, Ste 310 Overland Park, KS 66207

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Position Qualifications: Bachelor's degree in Computer Information Systems or related on months experience to include maintaining and managing Group Ware Messaging Systems, operating systems, and training in teaching and developing material for software applications.

Salary: $33,475.00 per year

Must have proof of legal authority to work permanently in the United States. Send resumes with Social Security number to: Indiana Department of Workforce Development, 10 N. Senate Ave. Indianapolis, IN 46204-2277. Attn: Mr. Gene R. Replogle (De 6050890

Indiana University is an Affirmative Action/Equal Opportunity Employer

SOFTWARE ENGINEER In-house life Senior Staff Analyst (Multiple positions) (25) Monday through Friday, 8 a.m. to 5 p.m., $58,000 annually. Required is a Bachelor of Science or Bachelor of Arts degree or its equivalent in Computer Science, Engineering, Math, Physics, or Business and one (1) year to experience in the job being offered or one (1) year of related experience as a Software Developer and/or Programmer/Analyst. Related experience prerequisites and (1) year of product-related or applications experience in one of the following skill areas: C or C++, UNIX, plus a database (INGRES, SYBASE, INFORMIX or ORACLE) Embedded Processors - Assembly Language (68000 series and/or 80x 86) realtime DSP to image processing, VAX/VMS, RDB, C, or MS-WINDOWS with VISUAL BASIC or VISUAL C++. Client Server, Smalltalk. As equivalent to a baccalaureate degree, employer will accep three years of programming and/or systems analysis experience for each year of formal academic training lacking. Position requires the utilization of engineering and/or computer science principles in the design and development of high quality applications or product related software associated with user interface applications and various platform architectures. In designing and developing software activities include interfacing with systems, coding debugging, testing and documentation for real-time embedded systems, signal processing, user interface, client-server and control, or image processing applications. Creates software programs with structures that will carry forward to future platforms and develops system control code and computer computer protocols via the use of C or C++ UNIX, relational databases, embedded processor, DSP, image processing, VAX/VMS, RDB C, MS-DOS, WINDOWS with Visual Basic or Visual C++ or Smalltalk in a Client Server environment. Performs database and system administration functions that include design integration, installation, and maintenance. Assists managers with team and project coordination functions. Communicates progress, issues, and concerns among project teams, customers, and corporate management. Must have proof of legal authority to work permanently in the United States. Interested applicants submit two (2) resumes with reference to case #C100616 and #C100617 to: Mr. Gerald Gulseth, DWE-ALC, P.O. Box 7972, Madison, WI 53707-7972

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Monday through Friday, 8 am to 5 pm. $49,480 annually. Required is a Bachelor of Science degree in Computer Science or Electrical Engineering and three (3) years of experience or the job being offered or three (3) years of related experience as a Programmer and/or Engineer. Related experience prerequisites two (2) years of experience in software applications designed for automated paper finishing machinery to an engineering design context, the candidate uses principles of computer science to analyze specifications to company's proprietary products and to convert engineering operations into a formal processable by computer by designing and writing software programs for specific interface applications in automated state-of-the-art paper finishing machinery and equipment. Reviews symbolic formulations, programs, flow charts and block diagrams, and encodes resultant equations for processing via the utilization of DOS, Windows, Unix, Vax VMS operating systems and Allen-Bradley (6200) Dialogic XD (FibCad GdCad LoCad HwCad), Siemens (S5) C, Fortran and Wonderware Intouch programming languages and tools. Utilizes advanced command language building and editing techniques to create interface software for paper finishing equipment that includes calendars, coasters, winders, and reels. Confers with engineers and other technical personnel to resolve problems of operational intent, innovative design standards, and feasibility of computer processing as software is matched to hardware product created by an engineering team. The candidate is a technical expert on function, programming and software applications. Participates in customer installations of information systems that incorporate relational databases, manual and machine procedures and applications programs. Test and modifies software to achieve optimum performance in customer's manufacturing environment. Develops new subroutines or expands the program to streamline function and enhance applications. Acts as engineer liaison for technology transfers for new products developed by R&D and Engineering Centers of the parent company. Must have proof of legal authority to work permanently in the United States. Interested applicants submit two (2) resumes with reference to case #C100633 to: Mr. Gerald Gulseth, DWE-ALC, P.O. Box 7972, Madison, WI 53707-7972

Programmer Analyst (multiple positions) to analyze design develop and support software applications utilizing IBM MVS/ESA/JCL, VSE/SP, SQL, DB2, VSAM databases skills with CICS Command level VS COBOL/II, ISPF/PDF, IMS DB/DC, MVS/JCL, REVOLVE VIA-SOFT, QMF, and SPUFI. analyze, review & alter software systems & programs to increase operating efficiency and customize software systems to new requirements, write documentation for users, describing systems functions, operating instructions and related procedures, assist users in resolving software problems by re-engineering applications. Reqs. Bachelor's in Comp. Sci., Comp. Engg., Comp. Info. Systems, Electrical or Electronics Engg. or Mathematics or its foreign educ. equiv., 1 yr exp in job offered or 1 yr related exp such as Programmer, Systems Analyst or Consultant. Related exp must have included using any 3 of the above listed tools. $53K, 40 hrs/wk. 8:30a-5:30p. Send resume to MJC/ESA, PO Box 11170 Detroit, MI 48211-1170 Ref #38890 "Employer Paid Ad"

Programmer Analyst (multiple positions) to analyze design develop, code & support software applications using CICS, DB2, Cobol, IMS, JCL & VSAM, conduct unit & integration testing, prepare flow charts & implement documentation, conduct user training & instruction & prepare user manuals. Reqs. Bachelor's in Comp Sci, Comp. Engg, Comp. Info. Systems, Comp Application, Electrical or Electronics Engg. or Mathematics or its foreign educ. equiv., 1 yr exp in job offered or 1 yr related exp such as Programmer, Systems Analyst or Consultant. Related exp must have included using any 3 of the above listed tools. $53K, 40 hrs/wk. 8:30a-5:30p. Send resume to MJC/ESA, PO Box 11170 Detroit, MI 48211-1170 Ref #41599 "Employer Paid Ad"

SR. TECHNICAL ANALYST Analyze, test and certify computer applications to be installed on Local Area Network (LAN) OS/2 and Windows NT platforms create internal web page to help users obtain certifications for applications, send to query Access and Oracle databases, recommend programming languages (Visual Basic & C) for applications to run on the LAN, ensure stability and integrity to the LAN, advise and work with application developers on solving technical issues.

B.S. degree in Management Information Systems or Computer Science required. Two years experience in the position or two years as an Analyst &/or Programmer required. Experience or related occupation must include programming applications to run on a LAN, utilizing Visual Basic and C.

40 hrs./wk. 9:00 a.m. - 5:00 p.m., $56,555/year. Must have proof of legal authority to work permanently in the U.S.

Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, Illinois 60605. Attention: Lolita Jackson, Reference Number V-IL 21014-J. NO CALLS. AN EMPLOYER PAID AD

Consultant needed for software development and consulting firm located in Oak Brook, Illinois. Job duties include: Analyze, design, develop, implement, and test computer applications. User requirements gathering and design. Use SQL Server, SSADM, JSP, Visual Basic, Sybase, and AB Project Workbench. Applicant must have B.S. degree in Computer Science. Applicant must also have 2 yrs. exp. to the job duties described above or as a Consultant or Programmer Analyst which includes designing and developing computer applications utilizing SSADM, JSP, Visual Basic, SQL, and Sybase. 40hrs/wk, 8:00 am - 5:00 pm, Mon-Fri, $70,000/yr. Send 2 copies of both resume & cover letter (NO CALLS) to: Illinois Dept. of Employment Security, 401 S. State St. - 7 North, Chicago, IL 60605. ATTN: Brenda Kelly, Ref# V-IL 21295-K. Must have proof of legal authority to work permanently to the U.S. AN EMPLOYER PAID AD

Database Administrator II (2 openings): For SE Wisconsin printing firm. Database installation, backup recovery, performance tuning, disk space management and RDBMS (relational database management systems) support. Requires Bachelor's degree in management information systems or related. Experience with Transact SQL, relational database management systems, and DEC VMS platform required, as demonstrated by to least 1 college course or 6 months work experience to each area. $32,000 to $37,000, 40 hour workweek, 8:00 AM to 5:00 PM, M-F. SEND 2 COPIES OF RESUME TO G. GULSETH, DWE-ALC, PO BOX 7972, MADISON, WI 53707-7972. REFER TO FILE NO. C100829.

SOFTWARE ENGINEER to provide on-site software consultancy to analyze design, develop, test, implement and support business software applications for legacy systems using MVS/ESA, JCL, RACF, VS COBOL II, VSAM, DB2 4.3, SQL, IMS DB, IMS DC, QMF, SPUFI, BMC, PROEDIT, Princeton Software, MF COBOL II, DB and CICS on operating systems MVS/ESA in IBM mainframe environment (IBM ES 9000), design and develop IBM relational database (DB2) interface of mainframe databases DB2 and IMS with client/server applications and object oriented technologies. Requires B.S. in Civil, Electrical or Mechanical Engineering or Computer Science and two years experience in the job offered or as Programmer/Analyst. Experience must include 6 months in DB2 design and development. 40% travel to client sites within the United States required. Salary $57,500 per year. 8:30 am to 5 pm, M-F. Must have proof of legal authority to work permanently in the United States. An Employer Paid Ad. No calls: send 2 copies of both resume and cover letter to: Illinois Dept. of Employment Security, 401 South State Street - 7 North, Chicago, IL 60605. Attn: Sheila Lindsey. Reference #V-IL 20834-L

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Computer Programmer/Analyst, 40 hours per week, 8:00 A.M. to 9:30 P.M. Salary $57,568 per year. Job duties: Documentation of standard problems, resolutions to hardware/software problem, responsible for new server set up configuration and integration, tools utilized are Oracle, Lotus, Visual Basic and C, requires bachelor's degree in computer science and 2 years of experience in job offered or 2 years in experience as computer programmer, applicants send resumes with social security numbers to the Indiana Department of Workforce Development, 10 N. Senate Ave., Indianapolis, IN 46204-2277. Attention: Mr. Gene R. Replogle, I.D. #6050894.

Manager Information System. Candidate will manage employer's fish import/export wholesale distribution MIS system which consists of local and remote networked PCs using a company-wide accounting/inventory system developed using DBase Foxpro & Clipper Utilities or DOS Windows & LAN environments. Administer maintenance of LAN to ensure data integrity. Provide tools and reports to efficiently manage the flow of merchandise from the collecting stations in the U.S. and overseas to the distribution warehouses. Require B.S. in Computer Science (or equivalent foreign degree) + 1 year exp or 2 yrs. related exp as systems analyst. 6 qualifying under recent exp. then related exp must include using the following PCs, LAN, Modems, DBase, Foxpro, Clipper, DOS, Windows, designing inventory management systems for import/export wholesale distribution, develop as integrated MIS for the fish import/export industry. $50,800/yr. 40 hr/wk., O/T hrs. work schedule 8am to 5pm M-F. Must have proof of legal authority to work permanently in the U.S. Franklin Park area employer. Applicants to send resumes to Illinois Dept. of Employment Security, 401 S. State St., 7 North, Chicago, IL 60605. Attn: Lydia Clarke. Reference # V-IL-20574-E. an employer paid ad, no calls - send 2 copies of both resume and cover letter.

Software Consultant to consult with client to define need or problem, analyze user requirements, specifications, procedures & problems to automate processing using Oracle, MS SQL Server, Peoplesoft, Peopletools, SQR, Crystal Reports, PowerBuilder, Pro*C, PL/SQL, SQL*Report/Writer and FoxPro, confer with personnel to analyze current operational procedures, review computer system capabilities and determine 6 changes in existing programs, can be accomplished by the system, study existing information processing systems to evaluate effectiveness, develop new systems to improve productions and perform studies to aid development of new systems. Reqs. Master's or Comp Sci Systems Analyst, Comp Info Systems, Comp Engg, Electrical or Electronic Engg or Math or its equiv or educ & exp plus 6 mos exp in job offered or 6 mos related exp each as Systems Analyst, S/ware Consultant, Programmer, Programmer Analyst or S/ware Engr. Will accept a Bachelor's degree, or a foreign equiv degree, followed by at least 5 yrs of progressive exp in the spec field, or less of the reqd educ. Related exp must include designing & developing s/ware interface, writing d/base scripts & using Oracle SQL Plus, PL/SQL & Pro*C. $60,901/yr, 40 hr/wk, 8a-5p. Send resume to MJC/ESA, PO Box 11170 Detroit, MI 48211-1170. Ref #169398 "Employer Paid Ad"

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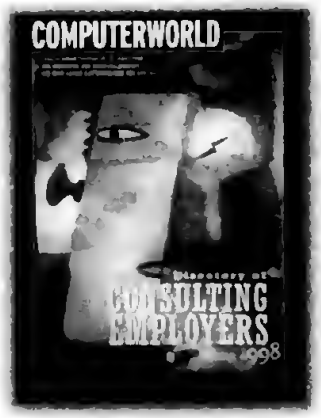

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Software Engineer sought to design develop and implement customized software applications in a client/server environment. Evaluate interface between hardware and software. Determine systems feasibility. Develop and direct software testing procedures, programming and documentation. Will utilize Visual Basic and Oracle. Masters or equivalent or Computer Science, Engineering or related field + 2 yrs/exp in job offered or 2 yrs/exp in information technology. Such experience must include Visual Basic and a relational database. Applicant must be willing to travel to various client sites throughout the U.S. Hours: 40/wk. Salary: $72,999/yr. If interested please send resume to Case # 19981673, PO Box # 6968, Boston, MA 02114.

Software Engineer (Roswell GA). Design and develop complex applications for telecommunication industry. Develop distributed systems and O3 interface for TMN application using C++ C programming languages and GDMO Toolkits. Develop engineering applications using C++ Orbix, and multithreaded programming concepts. Develop GUI application using X/Motif on Unix platform. Develop object-oriented interface to relational database using Rogue/wave tools. Req. Master's in Computer engineering, or electrical engineering, or other related engineering discipline plus 3 yrs exp in job described. Sal $80K/yr. Resume to HR manager Object Network Enterprises, Inc., 140 Sheringham Dr. Roswell GA 30076, or email: admin@objectnetwork.org.

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Software Engineer, Sr (Bedford, NH). Evaluate, assess complex sophisticated software architectures, specs & designs, ensure integration between front and using PowerBuilder & back end using MS SQL Server or Sybase SQL running on Windows NT, provide high level tech support & troubleshooting. Masters/Comp Sci or Info. Sys. or Engg or Math (mos/exp. in job offered or 6mos as Prog/Analyst. Indepth knowledge of PowerBuilder, MS SQL Server, Sybase SQL, Windows NT, will acc. bache. deg. plus 2 add'l yrs/exp. in lieu of masters deg. 40hrs/wk (9-6, M-F) $58,174/yr. Send two (2) copies of resume/letters of application to Job Order #99-164, P.O. Box 989, Concord, NH 03302-0989.

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Business Analysts: Positions available in our New York, Chicago and San Francisco area offices. Will work as team leads with exceptional teams of computer and business professionals participating in full life-cycle development of distributed, object-oriented applications. Will apply OO analysis and design methodologies and object modeling techniques to design OO applications. Will be responsible for working with users to define system requirements. Will translate those requirements into clear and precise specifications for the developers to implement. Will design screens, write use cases, design and perform system testing. Requirements: Master's degree in Business, Computer Information Systems or related field or equivalent. If interested, please email your resume and cover letter to jobs@thoughtworks.com.

EMC Corporation, the world leader in enterprise storage systems, software products and services, is looking to fill the following position:

Marketing Manager: Must have a B.S. OR Foreign Equiv. in Electrical Engineering, Computer Science OR Computer Engineering AND 5 yrs exp OR 5 yrs Marketing Management experience for Sophisticated Computer Products & Services. Salary meets or exceeds Prevailing Wage. Must be willing to travel. **Job Code: MM1**

Forward your resume to: HR Dept. 171, South Street, Hopkinton, MA 01748.

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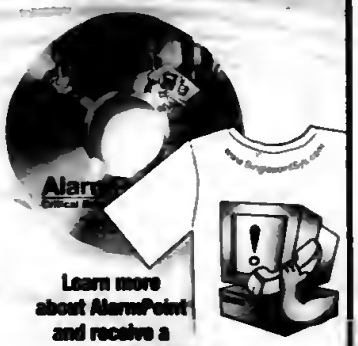

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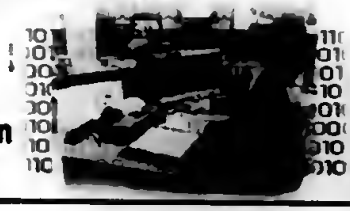

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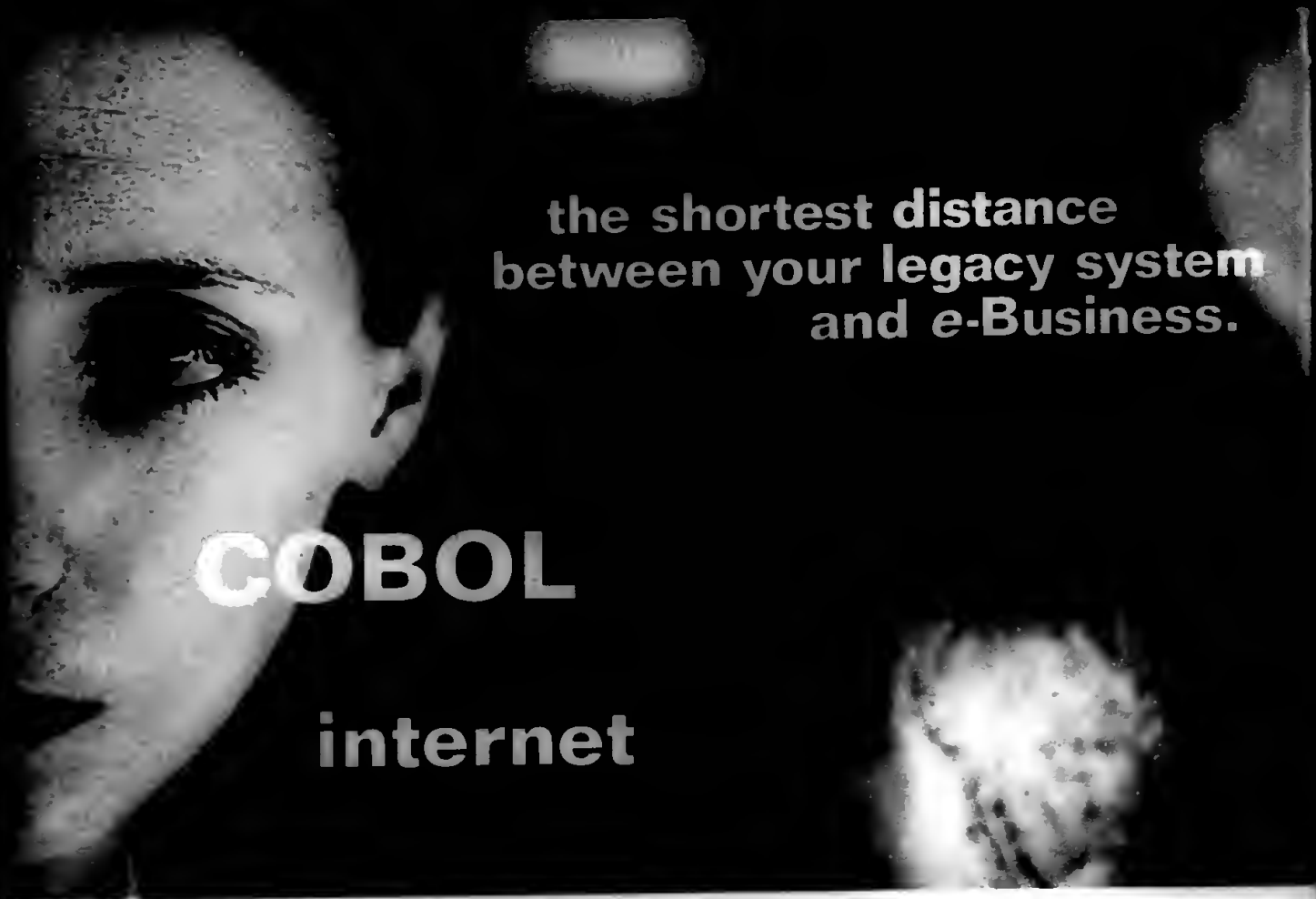

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PERCENT		PERCENT	
Secure Computing Corp.	64.5	Sterling Commerce Inc.	-24.7
CBT Group Plc.	32.7	The Vantive Corp.	-24.2
Legato Systems Inc.	18.8	Sapient Corp.	-14.7
Apple Computer Inc. (H)	17.1	Picturetel	-12.7
PSINet Inc.	16.6	LM Ericsson	-11.3
Documentum	16.3	IDX Systems	-11.0
Micron Technology	15.6	Shared Medical Systems	-9.5
Dell Computer Corp.	14.4	Ciber Inc.	-9.0

DOLLAR		DOLLAR	
America Online	12.00	Yahoo Inc.	-14.63
Legato Systems Inc.	10.50	Sterling Commerce Inc.	-9.06
Safegard Scientifics	9.10	Sapient Corp.	-8.50
PSINet Inc.	8.06	Shared Medical Systems	-6.00
Apple Computer Inc. (H)	7.00	LM Ericsson	-3.75
Micron Technology	6.00	Infoseek	-3.63
Gateway 2000 Inc.	6.50	SAP AG	-3.25
Lycos Inc.	6.30	Lexmark International Group	-3.25

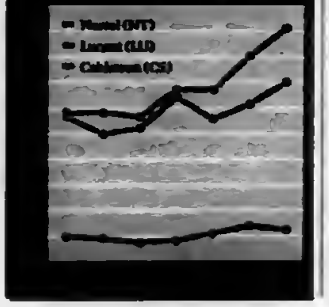
Broadband Demand A Boost for Hardware

Equipment companies stand to gain from systems updating

BY KATHLEEN OHLSON

A PUSH TO increase the number of broadband service providers could prove to be a financial bonanza for broadband networking vendors like Nortel Networks and Lucent Technologies Inc. and could help bring about a last-ditch turnaround for Cabletron Systems Inc. That push could become a windfall for stockholders.

Matthew Barzowskas, an analyst at First Albany Corp. in Boston, says increasing the number of broadband service providers will mean plenty of business for equipment companies.



Lucent and Nortel will be among the major players in a market that Barzowskas predicts will be worth "hundreds of billions of dollars."

Toronto-based Nortel (NYSE:NT) is currently a leader in telecommunications networking and data communications networking gear, says Todd Coupland, an analyst at CIBC Wood Gundy, also in Toronto. Nortel reported $4.4 billion in revenue for the first quarter.

Makings of Winners

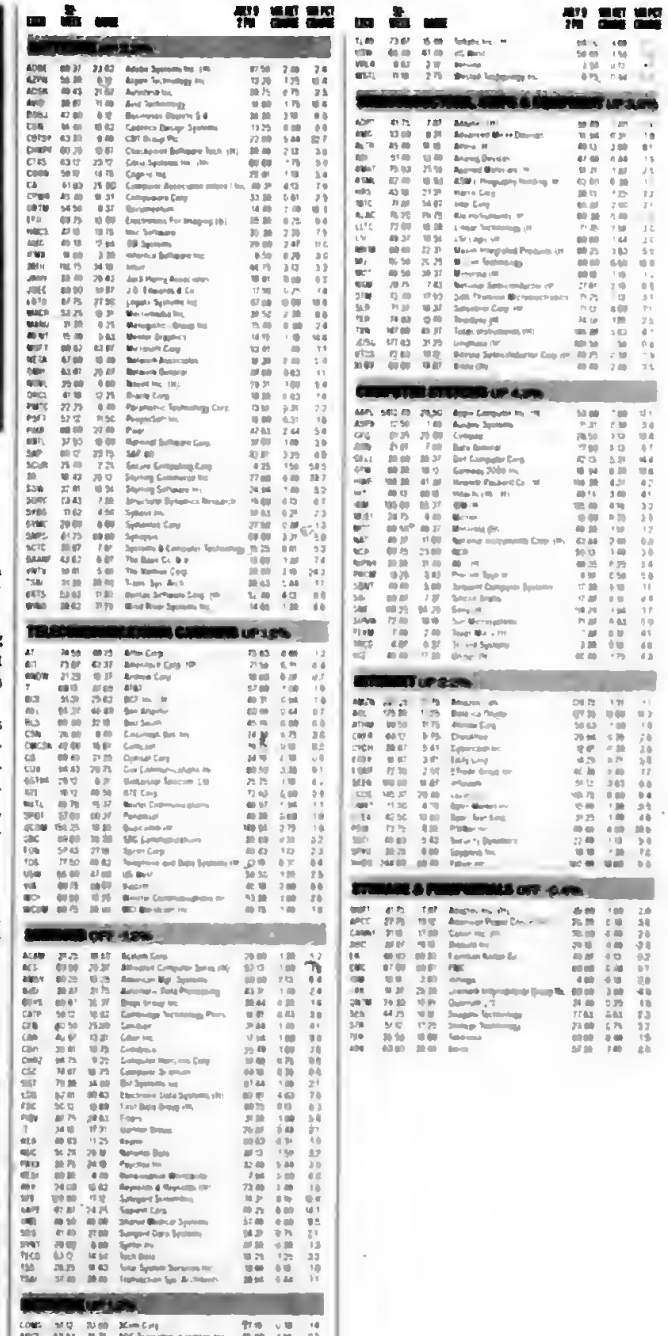
Despite Nortel's position, Coupland says he doesn't currently rate the company's stock as a Buy because its shares are overpriced. "A small correction in the share price would make it into a Strong Buy," he says.

Analysts say Lucent (NYSE:LU) will also be a major player in the broadband market even though it lacks the equipment to upgrade its systems.

Lucent has the size and financial strength to buy in to this market and is in a nice position to develop systems, says James Kerdersha, an analyst at Boston-based SG Cowen Securities Corp. Lucent, which SG Cowen ranks as a Buy, made headway into this space by buying Ascend Communications Inc. in January and creating the Broadband Networks Group.

Barzowskas says Cabletron (NYSE: CS) must get a piece of the broadband network pie if it is to improve its position in the market. Barzowskas rates Cabletron as a Hold, but he says the company now has a management team that should help it become a service provider in the cable area.

"I don't see a rebound happening if they can't," Barzowskas says.



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PSINet Inc	8.06
Apple Computer Inc. (H)	7.88
Micron Technology	8.88
Gateway 2000 Inc	8.50
Lycos Inc.	6.38

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The Vantive Corp	-24.2
Sapient Corp	-14.7
Picturetel	-12.7
LM Ericsson	-11.3
HIX Systems	-11.0
Shared Medical Systems	-9.5
Ciber Inc	-9.0

DOLLAR	
Yahoo Inc.	-14.63
Sterling Commerce Inc	-9.06
Sapient Corp	-8.50
Shared Medical Systems	-8.00
LM Ericsson	-3.75
Infoseek	-3.63
SAP AG	-3.25
Lexmark International Group	-3.25

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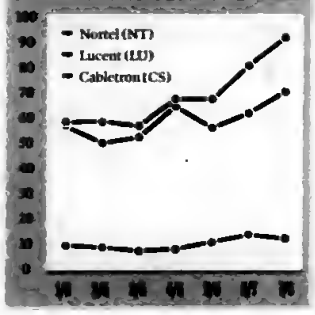
A PUSH to increase the number of broadband service providers could prove to be a financial bonanza for broadband networking vendors like Nortel Networks and Lucent Technologies Inc. and could help bring about a last-ditch turnaround for Cabletron Systems Inc. That push could become a windfall for stockholders.

INDUSTRY ALMANAC

Matthew Barzowskas, an analyst at First Albany Corp. in Boston, says increasing the number of broadband service providers will mean plenty of business for equipment companies.

Broadband Bonanza

The future looks bright for networking vendors in a broadband world:



Lucent and Nortel will be among the major players in a market that Barzowskas predicts will be worth "hundreds of billions of dollars."

Toronto-based Nortel (NYSE:NT) is currently a leader in telecommunications networking and data communications networking gear, says Todd Coupland, an analyst at CIBC Wood Gundy, also in Toronto. Nortel reported $4.4 billion in revenue for the first quarter.

Makings of Winners

Despite Nortel's position, Coupland says he doesn't currently rate the company's stock as a Buy because its shares are overpriced. "A small correction in the share price would make it into a Strong Buy," he says.

Analysts say Lucent (NYSE:LU) will also be a major player in the broadband market even though it lacks the equipment to upgrade its systems.

Lucent has the size and financial strength to buy in to this market and is in a nice position to develop systems, says James Kerdersha, an analyst at Boston-based SG Cowen Securities Corp. Lucent, which SG Cowen ranks as a Buy, made headway into this space by buying Ascend Communications Inc. in January and creating the Broadband Networks Group.

Barzowskas says Cabletron (NYSE:CS) must get a piece of the broadband network pie if it is to improve its position in the market. Barzowskas rates Cabletron as a Hold, but he says the company now has a management team that should help it become a service provider in the cable area.

"I don't see a rebound happening if they can't," Barzowskas says.

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Summer Boom Taxes Travel Sites

rector of technology services at Carlson.

That's the good news and bad news of the online travel boom. Companies are scoring big in Web-site hits and bookings, but in many cases, online systems must be re-evaluated. The hospitality and travel reservation systems are accustomed to handling increased capacity during holidays and summer vacation months, but companies must now apply the same principles to their online systems year round.

Among the industry's recent moves:

- Yahoo Inc.'s travel site is doubling its information technology staff to minimize site downtime.
- United Air Lines Inc. is adding dozens of servers to meet capacity demands.
- Marriott International Inc. is adding network bandwidth between its Web site and reservation system to handle an onslaught of bookings.
- Hilton Reservations Worldwide is beefing up its call center staff for online visitors who need help.

About 5 million U.S. households booked trips online last year, according to a study by Forrester Research Inc. in Cambridge, Mass. That number is expected to grow to 9 million this year and 26 million by 2003. The study projects that U.S. households will spend $7.8 billion booking trips online this year, up from $3.1 billion last year, and that the number will jump to $29.4 billion in spending by 2003.

"The IS backbone creates the foundation on which the marketing [of the sites] will succeed or fail," said James McQuivey, a Forrester analyst and author of the study.

Staffing Up

Yahoo's travel site has seen a 350% growth in bookings for hotels, airlines, car rentals and cruises since last summer, and registered users in this year's second quarter rose to 65 million, from 47 million in the previous quarter. To ensure 24-hour availability and to prevent crashes, the company has doubled its staff for systems monitoring. It has also doubled the number of servers, although Yahoo declined to say how many.

"With so many servers, it minimizes the number of [site users] who see when we have crashes," said Arah Schuur, a producer at Yahoo Travel in Santa Clara, Calif.

About 27% of visitors to the United Air Lines site will make a reservation online, which added up to $30 million in online ticket sales in May — a 100% increase over May 1998. Total online sales last year were $200 million, according to the airline.

In May, United added features to its site that allow customers to redeem frequent-flier awards online. To handle the expected influx, its server farm company, Internet Travel Network Corp. in Palo Alto, Calif., built a data center with 45 new servers.

"We had concerns about the volumes that we would generate. This gives us a fivefold increase in capacity," said Rick Apeland, United project manager for electronic business.

Marriott received 2 million hits on its Marriott.com Web site in May, with 37% of all travel-site visitors eventually booking hotel rooms. To keep up with demand, executives have approved a "significant investment" for new servers to increase capacity and new links directly to Marriott's mainframe Transaction Processing Facility reservation system, according to Mike Dalton, senior vice president of lodging systems at the Bethesda, Md.-based company.

"More and more, the traffic is related to transactions, as opposed to people just looking at the site. Bandwidth between the site and our central mainframe — where the true activity occurs — has increased significantly," Dalton said.

Those increases in online bookings also mean more calls to customer service centers.

Carrollton, Texas-based Hilton Reservations Worldwide, a division of Hilton Hotels Corp., has just opened a call center in Menet, Calif., to help handle increased seasonal traffic. The center has a staff of 150, which is expected to rise to 220 by September.

"We see a 25% increase in our number of calls from June to September, so we brought this call center on just in time in early June," said Sheila McFarland, a senior vice president of operations at Hilton. Increased Web traffic was one factor in creating the new call center because people often called to verify reservations they had made online, she said.

Enterprise Rent-a-Car Co. and rival Avis Rent a Car System Inc. both have added additional network and Web-site monitoring for increased summer site traffic.

Carlson Hospitality	Installed high-capacity firewall
Yahoo Travel and Marriott International	Added staff and servers
United Airlines	Launched new data center
Avis and Enterprise	Added site monitoring tools to help ensure uptime
Hilton Reservations	Built new call center

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IT Debates Instant Messaging

The most popular instant messaging tool is America Online Inc.'s Instant Messenger, a free piece of software that lets users see which friends or colleagues are online. They can send a message that immediately pops up on the addressee's screen, and two or more users can have an interactive discussion.

Instant messaging is certainly creeping in at BancorpSouth Inc.

"Someone found [Instant Messenger] and downloaded it. Someone else came by, saw it and installed it, too," recalled Dave Soper, vice president of network services at the bank's Tupelo, Miss., operations center.

Today, about a half-dozen workers use Instant Messenger for personal communications and for giving technical support, Soper said. He said the technology may become a valuable business tool in the future.

Similarly, Jim Nelson, assistant vice president of enterprise systems at Minneapolis-based Behavioral Health, a division of United Healthcare Corp., first saw Instant Messenger on one PC at the company last November. Today, it's on about 150 of the company's 2,000 desktops.

But Nelson said he's still trying to figure out "whether it's a valuable business tool, or whether it has the potential to be a distraction."

Credit Suisse First Boston has little doubt about the value. It's using a custom-developed instant messaging tool called Global Talk to let 1,500 bond traders, analysts and salespeople in offices worldwide exchange time-sensitive trading information.

The software replaces a public-address system that let traders shout offers over the floor. "It's better than e-mail, which isn't really a real-time system," said Joel Shandelman, vice president of fixed income and derivative systems.

Tracy Corbo, an analyst at market research firm Dataquest, predicted that instant messaging will become integrated with existing e-mail infrastructures.

In January, Lotus Development Corp. released Sametime, an instant-messaging and real-time collaboration tool that integrates with Notes. Microsoft Corp. has a free, real-time collaboration tool called NetMeeting. It offers text and voice chat, whiteboard, application sharing and full-fledged videoconferencing.

Nelson said he encourages the use of NetMeeting at his company, but many end users stick with Instant Messenger because it's "a slim [application] that you can keep up all the time."

BY THE NUMBERS

Instant Messaging

17% Percentage of companies where instant messaging is used

36% Of those companies, percentage that say they don't support its use

19% Average percentage of staff that are using instant messaging

Base: Survey of 149 IT managers at companies with 500 or more employees, multiple responses allowed

SOURCE: COMPUTERWORLD IT INTELLIGENCE UNIT PHARMAHAM NAGS

Microsoft NetMeeting	71%
AOL Instant Messenger	34%
Lotus Sametime	20%
Internet relay chat	14%

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"More and more, the traffic is related to transactions, as opposed to people just looking at the site. Bandwidth between the site and our central mainframe — where the true activity occurs — has increased significantly," Dalton said.

Those increases in online bookings also mean more calls to customer service centers.

Carrollton, Texas-based Hilton Reservations Worldwide, a division of Hilton Hotels Corp., has just opened a call center in Memet, Calif., to help handle increased seasonal traffic. The center has a staff of 150, which is expected to rise to 220 by September.

"We see a 25% increase in our number of calls from June to September, so we brought this call center on just in time in early June," said Sheila McFarland, a senior vice president of operations at Hilton. Increased Web traffic was one factor in creating the new call center because people often called to verify reservations they had made online, she said.

Enterprise Rent-a-Car Co. and rival Avis Rent a Car System Inc. both have added additional network and Web-site monitoring for increased summer site traffic ◗

What They Did This Summer

A sample of what some travel industry companies have done in anticipation of increased summer travel traffic

Carlson Hospitality	Installed high-capacity firewall
Yahoo Travel and Marriott International	Added staff and servers
United Airlines	Launched new data center
Avis and Enterprise	Added site monitoring tools to help ensure uptime
Hilton Reservations	Built new call center

Continued from page 1

IT Debates Instant Messaging

The most popular instant messaging tool is America Online Inc.'s Instant Messenger, a free piece of software that lets users see which friends or colleagues are online. They can send a message that immediately pops up on the addressee's screen, and two or more users can have an interactive discussion.

Instant messaging is certainly creeping in at BancorpSouth Inc.

"Someone found [Instant Messenger] and downloaded it. Someone else came by, saw it and installed it, too," recalled Dave Soper, vice president of network services at the bank's Tupelo, Miss., operations center.

Today, about a half-dozen workers use Instant Messenger for personal communications and for giving technical support, Soper said. He said the technology may become a valuable business tool in the future.

Similarly, Jim Nelson, assistant vice president of enterprise systems at Minneapolis-based Behavioral Health, a division of United Healthcare Corp., first saw Instant Messenger on one PC at the company last November. Today, it's on about 150 of the company's 2,000 desktops.

But Nelson said he's still trying to figure out "whether it's a valuable business tool, or whether it has the potential to be a distraction."

Credit Suisse First Boston has little doubt about the value. It's using a custom-developed instant messaging tool called Global Talk to let 1,500 bond traders, analysts and salespeople in offices worldwide exchange time-sensitive trading information.

The software replaces a public-address system that let traders shout offers over the floor. "It's better than e-mail, which isn't really a real-time system," said Joel Shandelman, vice president of fixed income and derivative systems.

Tracy Corbo, an analyst at market research firm Dataquest, predicted that instant messaging will become integrated with existing e-mail infrastructures.

In January, Lotus Development Corp. released Sametime, an instant-messaging and real-time collaboration tool that integrates with Notes. Microsoft Corp. has a free, real-time collaboration tool called NetMeeting. It offers text and voice chat, whiteboard, application sharing and full-fledged videoconferencing.

Nelson said he encourages the use of NetMeeting at his company, but many end users stick with Instant Messenger because it's "a slim [application] that you can keep up all the time." ◗

BY THE NUMBERS

Instant Messaging

17% Percentage of companies where instant messaging is used

36% Of those companies, percentage that say they don't support its use

19% Average percentage of staff that are using instant messaging

Base: Survey of 149 IT managers at companies with 500 or more employees; multiple responses allowed

Instant Leaders

Which instant messaging or real-time collaboration products are in use or will be in use in 12 months at your company?

Microsoft NetMeeting	71%
AOL Instant Messenger	24%
Lotus Sametime	20%
Internet relay chat	14%

Base: 49 IT managers at companies with 500 or more employees where companies use instant messaging or real-time collaboration products; multiple responses allowed

FRANK HAYES/FRANKLY SPEAKING

Y2K: *Bor*-ing!

DANG! By now I was expecting stories of rioting in the streets as a hundred thousand unpaid state and municipal workers stormed city halls and state houses demanding their wages. I figured the cities would be burning, the freeways would be drag strips and the garbage would be piled high in the summer heat. After all, wasn't July 1 the day most states and cities started Fiscal Year 2000? And wasn't that supposed to signal the first wave of major-league Y2K computer crashes and the beginning of The End Of The World As We Know It?

The End Of The World hasn't had a very good year in 1999. Deadline after Y2K deadline is marching by, and no one seems to notice. They don't notice because, for the most part, things aren't failing. July 1 came and went, and state and city governments are still running, paychecks are showing up and computers aren't crashing.

That's the boring reality of Y2K: business as usual.

The Y2K-is-a-hoax crowd, of course, explains that nothing has happened because, well, Y2K is a hoax. The end-of-the-worlders insist things *will* fall apart — we've just been miraculously lucky so far.

Nope. This boring Y2K reality is one you've literally created. A million programmers are bashing their brains out to beat the millennium bug. And with each step toward success, the biggest technology story of the decade gets a little more, well, boring.

Which is why IT people aren't getting any notice, much less any thanks, from TV networks and local newspapers. The End Of The World would have been a pretty big story, maybe bigger than Jordan and Gretzky and Elway all retiring. But business as usual isn't news. It's boring.

Matter of fact, there's lots of Y2K good news that hasn't been getting much play in the papers. Like the steady stream of announcements by little, local electric companies we've never heard of, that their power generating systems have passed Y2K tests. Those are exactly the kind of small outfits, crucial to the infrastructure, that year 2000 experts feared wouldn't have their Y2K act together. But they do. No news. Boring.

U.S. and Canadian airlines say they're 95% ready. Boeing and Lockheed and Airbus say the planes will fly.

Automakers say their cars will run properly.

And 98% of banks are ready, automated teller machines and all, according to federal bank examiners. On Jan. 1, it appears nothing will go wrong. Boring, boring, boring.

Maybe the biggest nonstory is the fact that, though we've already thrown something like a trillion dollars at fixing the year 2000 problem, the U.S. economy is still chugging along. Y2K is the biggest IT project in history, and it hasn't slowed business down. So it's not news.

It's been a lousy year for The End Of The World.

And how did this nonnews happen? A few years ago, we were galloping toward the edge of a millennial cliff, kidding ourselves that Y2K was a problem only for mainframe dinosaurs. No sweat.

Now, after *years* of sweat by IT shops, things are looking pretty . . . well, ordinary. The Y2K disaster prophecies and conspiracy theories are rapidly dwindling from real threats to the kind of bad fantasy we'd expect from a supermarket tabloid.

You did that, IT people. You, and nobody else.

You won't get credit on Page 1 of your local newspaper or as the top story on the nightly news. Those spots are reserved for catastrophes — not catastrophes avoided.

But we made it past July 1, and we're well on the way to New Year's Day, so somebody ought to say it:

Congratulations. And thanks. ▶

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

PERMATEMP CONTRETEMPS The June 28 Tank pointed out that Microsoft CFO Greg Maffei had slammed the company's temporary employees, calling them "not as good" as the full-timers. The roilsome Shark called for comments from "permatemps" everywhere – and got an earful. To wit:

JESSICA, a recovering temp herself, said Maffei may be right "because temps haven't got a reason to give a tinker's damn about the future of the company, [which] is basically telling you, 'We like what you do, but we don't see any reason to lift one finger about your future. It's easier to work you into the ground and punt you when someone younger comes along.'"

THE IN-BOX was still smoking from Jessica's e-grenade when another Tankster clocked in with a different take. "If it wasn't for the contractors and the temps, [big companies] would be out of business, as work would never get done," he wrote. "The so-called employees are too busy having meetings, playing politics and job-hopping." The signature: Contractor Extraordinaire.

REMIND ME TO RUN this past my CEO, who seems to think the only thing between him and the cover of *Fortune* is buzzword IT projects. One of the first two U.S. users to go live with SAP's ballyhooed R/3 for retailers is about to go belly-up, says a pilot fish. MJDesigns, a Texas chain of arts-and-crafts stores, will shut down next month. The collapse had nothing to do with SAP Retail, said former CIO Colby Springer (who left last month) – just a basic business meltdown.

LET'S TALK AFTER RECESS Jobtrak.com, an online outfit that tracks kids just out of college, says there are 12.7% more openings now than a year ago and that a ton of 'em are in IT (big surprise). Meanwhile, President Clinton talks up the Academy of Information Technology, an $8 million private deal cooked up by Lucent and others to train high school kids for IT careers. College, high school, middle school, whatever: Get us bodies!

CHRIS PETERS, former VP of Microsoft's Office Division, has quit to try to join a pro bowling tour. And God bless him for that, says the Shark, who was once a pretty fair kegler himself. Got a vendor gutter ball to report? Has your boss fouled lately? You know what to do: **sharky@computerworld.com**.

The 5th Wave

E-mail Rich Tennant at the5thwave@rtsc.net

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